

Municipality of Bombay

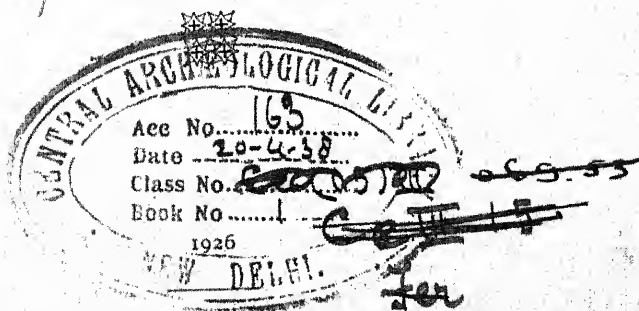
# VICTORIA AND ALBERT MUSEUM, BOMBAY.

## CATALOGUE OF THE INDUSTRIAL SECTION

BY  
ERNEST R. FERN

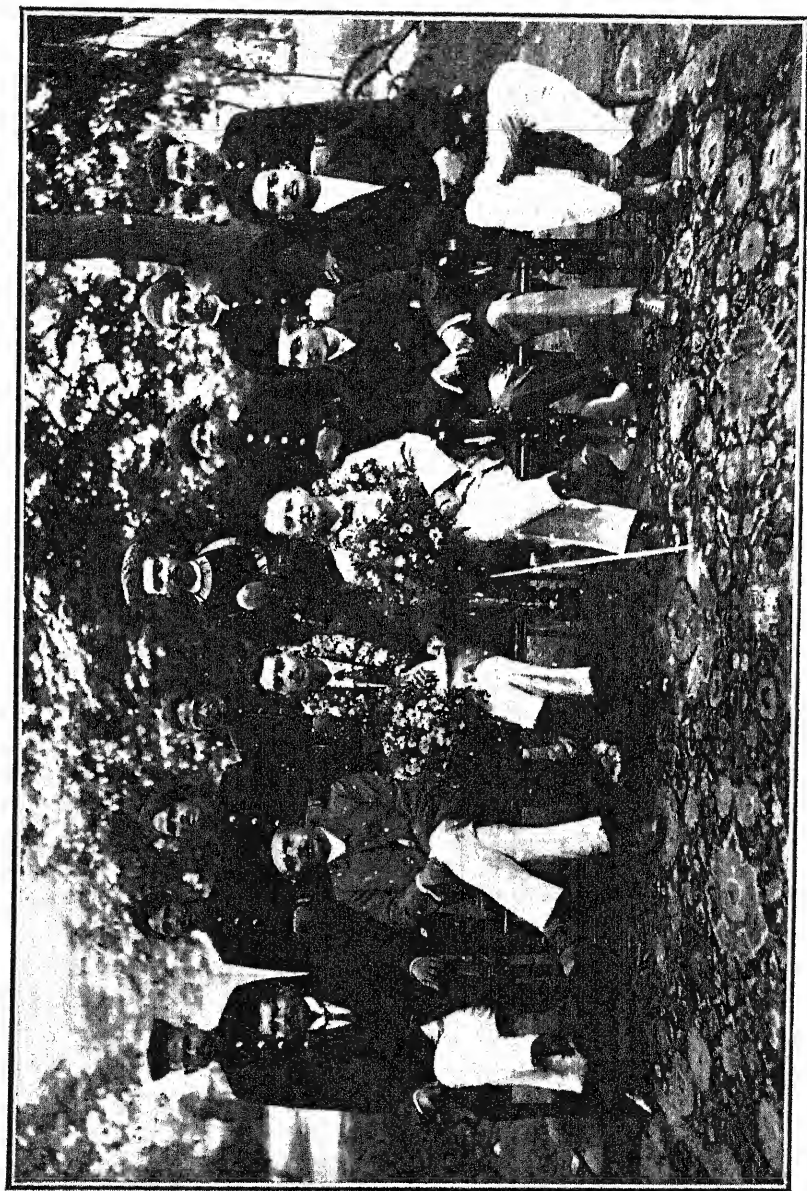
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Group taken on the eve of retirement from Office of Mr. Cecil L. Burns, Curator and Secretary of the Museum in 1918.

VICTORIA AND ALBERT MUSEUM,  
VICTORIA GARDEN, BYCULLA,  
BOMBAY, 1st October 1926.

ABOUT the year 1872, a Catalogue containing a bare list of the specimens, which the Museum then contained was made and published by the then Assistant Curator, the late Rai Bahadur B. A. Gupte. Soon after, Mr. Gupte's services were transferred by Government from the Museum Department; and since then, it appears from the records, the Museum affairs were badly handled so much so that in the middle of the year 1903, when Mr. Cecil L. Burns took charge of the Museum, he found the collection in the Museum in a state of confusion worse confounding, as most of the specimens remained unidentified and without labels, and a majority so damaged and mutilated that they had to be cast aside. Having carefully considered the object of the Museum, the class and capacity of the persons, who visited it the most, he decided to re-organise it upon a more popular basis by making the collection as interesting and instructive as possible to the ordinary visitors and to improve the equipment and general organization. The results of these labours have been that the entire collection of specimens was thoroughly over-hauled, and the different specimens were identified, and those belonging to different industries were grouped together, and exhibited in cases specially constructed to suit their requirements. As time went on and work progressed, new subjects such as would appeal most to the majority of visitors were taken in hand, and interest in them is now being revived by illustrating them by means of clay models, made at the Museum by an expert clay Modeller from Lucknow. That the work has been carried out in a satisfactory manner may be judged by the fact that in spite of other work intervening, I am now able to offer a complete Catalogue of the collection classed under Industries, and Ethnology. The encouragement I received from the public, when the first work of the kind was published in the year 1918, dealing with the prints and views connected with the topography of Bombay and its

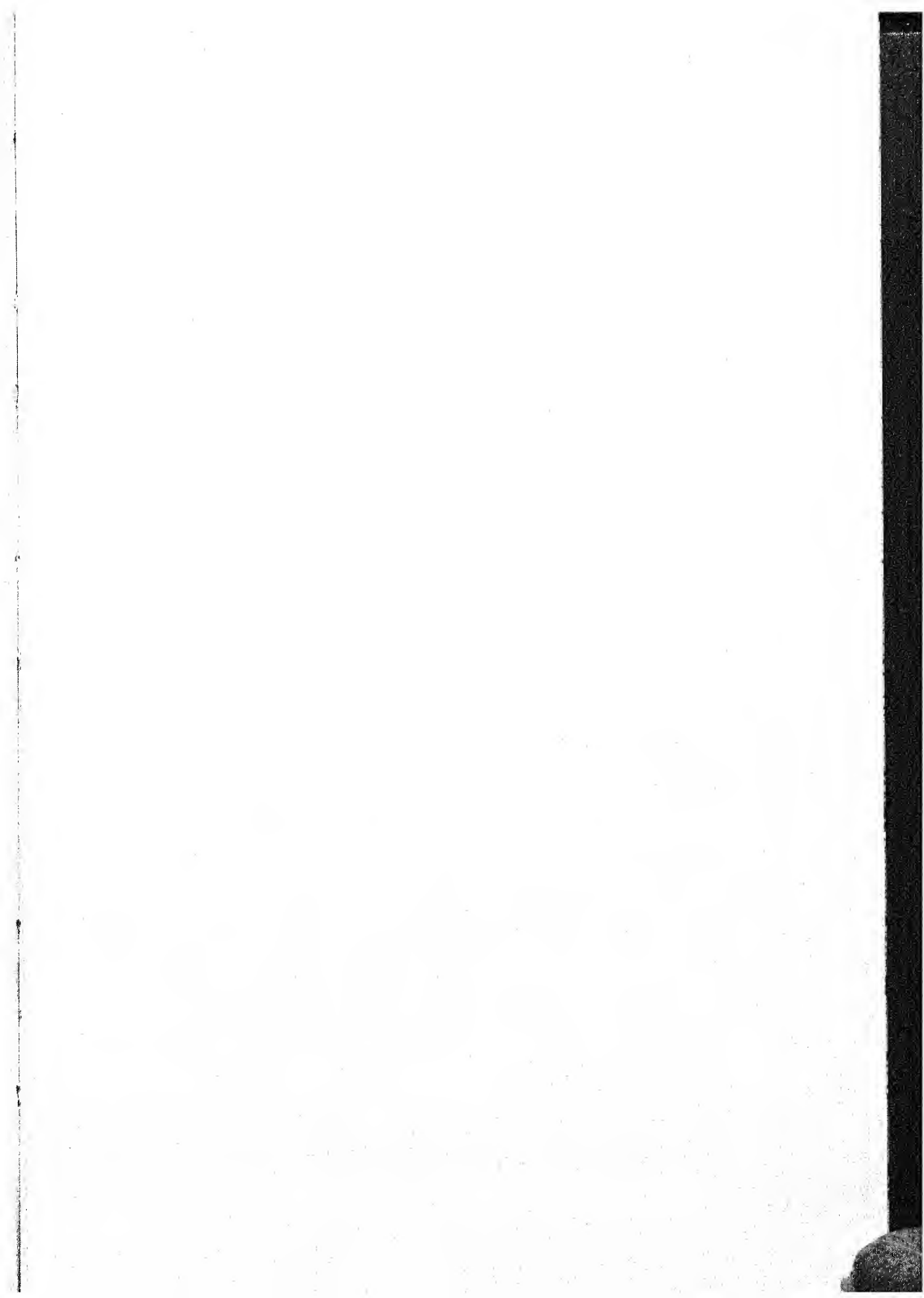


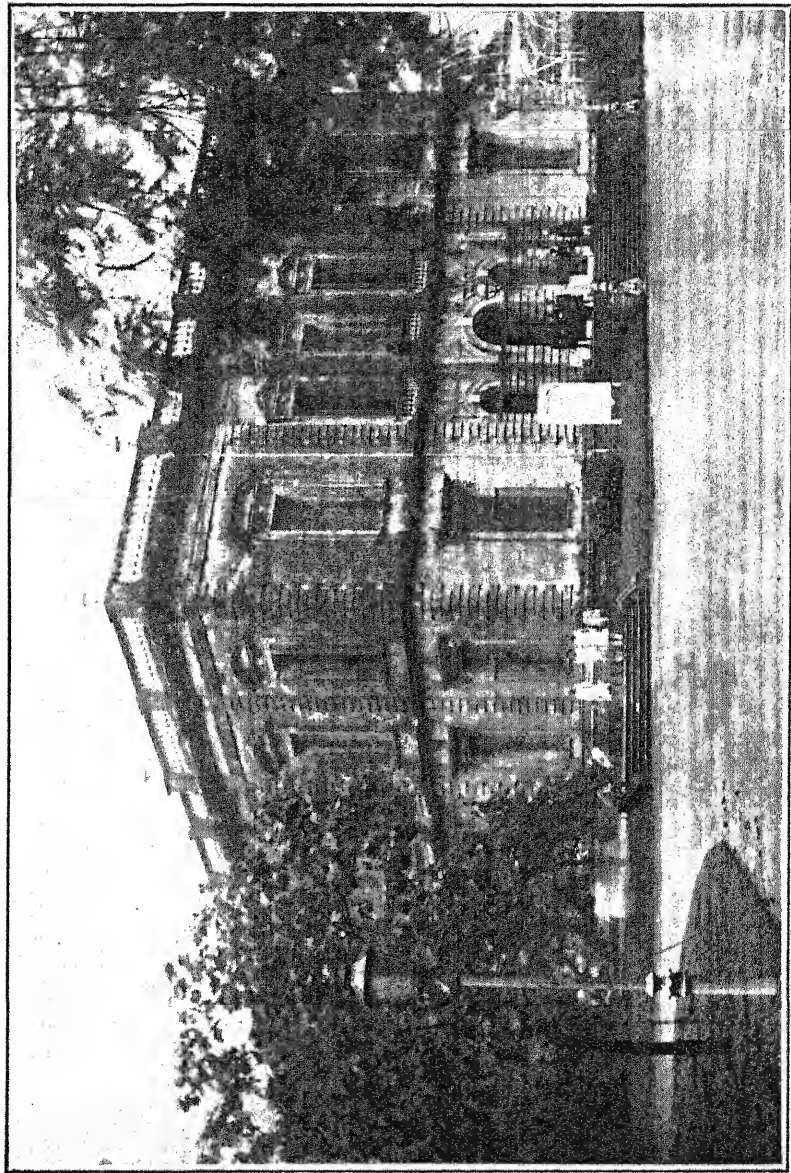
past history, was a sufficient inducement for me to undertake the preparation of a similar descriptive Catalogue of all the exhibits in the Museum, as it is sure to meet not only with the appreciation of the educated classes who visit the Museum, but will also be an easy means of acquiring knowledge and information regarding the various exhibits covering different fields of human activities in arts, industries and other subjects. In compiling the book care has been taken to make its contents of educative value by eliminating uninteresting details of a purely technical character. The descriptive accounts for the cases have been written after reference to Monographs and other Government Official publications dealing with the particular subject ; and for the most part, before these pages were put in type, they were gone through by Mr. Burns, when he was the Curator of the Museum. I am confident that any visitor to the Museum who refers to it, whilst going round the cases, will hardly fail to be struck by the idea that this Catalogue has supplied a long felt want by making our Museum more popular and attractive than it was in the past.

I cannot refrain from making a special mention of the care and labour which Mr. D. A. Pai, the Assistant Curator, has bestowed upon the compilation of the work. Gradually as the different specimens were identified and arranged in the cases, he proceeded with the work of Cataloguing them and writing the short descriptive labels, on each industry, which are now embodied in the book for the information of the public. In this work he was greatly assisted by the Museum Assistant, Mr. Laxman B. Samant, and Mr. Chunilal Murlidhar in preparing the photographs for illustrations.

I must express my thanks to the Municipal Commissioner and the Dy. Municipal Commissioner Mr. N. D. Metha, for the sympathetic manner in which they considered the proposal to print the Catalogue, as without their support, this would have been impossible.

ERNEST R. FERN,  
*Curator and Secretary.*





Victoria and Albert Museum, Victoria Garden, Byculla, Bombay.

## HISTORY OF THE VICTORIA AND ALBERT MUSEUM.

THE Victoria and Albert Museum, Victoria Garden, Byculla, was founded by the late Lord Elphinstone during his term of office as Governor of Bombay, who on the 5th of September 1855 appointed a Committee composed of Dr. Impey as President, with the Revd. Dr. Fraser, Dr. Sinclair and Mr. W. F. Hunter as Members, and Dr. G. Buist as Secretary and Curator. The idea of establishing a Museum was started in the year 1848, and the plan appears to have been further developed in 1851 in connection with the Great Exhibition held in London in that year. The Committee was formed to establish a Museum of Economic Products illustrating the raw products of Western India and the methods of converting them into manufactured articles, and to gather together a collection of Natural History specimens. A sum of Rs. 6,000 was placed to their credit by Government with a monthly allowance of Rs. 86 for Establishment. For the lodgment of the collection, the Mess Room of the Old Town Barracks, with one or two adjacent rooms were handed over to the Committee.

The collection of specimens had been started in the year 1848 and subsequently to this, a collection of objects for the Paris Universal exhibition of 1855 had been made in the Presidency Towns and in the various mofussil districts. The Sub-Committee by whom these collections had been made, were now called upon by Government to forward duplicates to form the nucleus of a collection for the new Central Museum. Through some misunderstanding the instructions of Government appear to have been carried out by only a few members of the Sub-Committee, and consequently owing to the incomplete state of the collections, they remained unseen by the public except that during the short period of Lord Canning's visit to Bombay in 1856, on his way to assume the Governor-Generalship of India, they were displayed for a few days.

In December 1856 a further grant of Rs. 2,000 was made to the Committee, and in the month of March 1857 the Museum was thrown open to the public. It did not, however, remain open for long. On the outbreak of mutiny of 1857, the military authorities required the rooms of the town barracks, in which the collections were lodged for the use of the officers of the numerous English regiments then arriving in Bombay, on their way to Northern India. The Brigadier issued a peremptory order to vacate the rooms within twenty-four hours, and so great was the haste with which the order was carried out, that the coolies employed in the work of removal, threw most of the specimens out of the windows, with the result that all of them were damaged, and the majority destroyed, while most of the office records were lost.

What remained of the collections was next lodged in the Town Hall. Both official and private interest in the undertaking appears to have entirely ceased at this time, for Government contribution to the contingent grant was discontinued, the Secretary was asked to reduce establishment to the lowest point short of total extinction, and the specimens in Natural History were either sold or returned to the parties from whom they had been received, while contributions from the districts ceased to be accepted.

From the foundation of the Museum till November 1856 the duties of the Secretary and Curator were carried on by Dr. Buist, when he was relieved by the Revd. Dr. Fraser. Dr. Fraser was Curator of the Museum till 1858, when Dr. G. Birdwood was appointed by Government to the post.

A Committee had hitherto managed the affairs of the Museum, and appointed its Curator; but Dr. Birdwood being appointed by Government, considered himself directly responsible to them, and without any previous reference to the Committee, corresponded direct with Government. The Committee in fact from this time, appears to have become extinct, for no further mention of them appears in the records.

No grant had been made by Government since that of Rs. 2,000 in December of 1856, but contributions of Rs. 1,000 each from the then Sir Jamsetji Jijibhoy and the late Hon'ble Mr. Juggonnath Shankarshet helped to meet the necessary

expenses, while various objects of interest and value had recommenced to arrive.

It had been felt from the very beginning, that to carry out the objects of a great Museum, it would be necessary to provide a suitable building.

On the assumption of the Government of India by Her Majesty The Queen in 1858, the Indians of the Presidency desired to commemorate the event ; and Dr. Birdwood together with the late Hon'ble Mr. Juggonnath Shankarshet, and the late Dr. Bhaw Daji induced them to embody this desire in a Museum building. A public meeting was held on the 15th of December 1858, when it was resolved to adopt this suggestion. A Committee was appointed to collect and apply the necessary funds, and so great was the interest shown in the undertaking, that Rs. 30,000 were subscribed before the meeting was dissolved. The subscriptions ultimately rose to Rs. 1,16,141. Independently of the money raised by the public, Government contributed Rs. 1,00,000 and also granted a site on the Mount Estate valued at Rs. 17,000. This was afterwards exchanged with the Agricultural Society for the plot on which the building now stands.

The result of these efforts was the laying of the chief corner stone of the Victoria and Albert Museum by Sir Bartle Frere on the 19th of November 1862. At first it was proposed to call the building the "Victoria Museum." But on the demise of His Royal Highness the Prince Consort, out of respect to his memory, and in deference to Her Majesty's wish, the name "Albert" was added to it. It was decided, when the building was completed, to hand it over to Government, "as a tribute from the Bombay Presidency to Her Majesty The Queen, in honour of the transfer of India to the direct sovereignty of the British Crown." It is now vested in the Corporation of the Bombay Municipality.

The building was originally designed by the late Mr. Tracey but at his death was transferred to Messrs. Scott, McClelland & Co. Many modifications were subsequently made to the original design involving the expenditure of a large sum of money. In consequence of this, it was found that the money granted by Government and subscribed by the public was not sufficient to

complete the building. The Joint-Secretaries to the Committee, Drs. Birdwood and Bhaw Daji, issued a fresh appeal for funds, but unfortunately for the undertaking, the commercial ruin of 1864-1865 rendered all hopes of private assistance futile. The works, which had been in progress, were suddenly stopped, and there appeared no immediate prospect of their being resumed. No progress was made during the next three years, and the unfinished building was rapidly falling to ruin, when in 1868, Government assumed charge of it, and on a further outlay of Rs. 1,43,000 completed the building at a total cost of Rs. 3,59,838.

The building is Italian Renaissance in style. It is oblong in plan, and comprises an Entrance Hall at its southern end, flanked by four small rooms, a central Hall, and two small rooms and a broad stair-case as its northern end. The central hall is surrounded by a deep gallery, access to which is gained by the stair-case mentioned above. The ground-floor and the galleries are lit by double row of windows in the walls, but the stair-case and the portion of the gallery above the Entrance Hall have recently had lanterns added, which give light from above.

The Central Hall is divided longitudinally into a central aisle and side bays by the columns which support the galleries, and the central portion of the roof. These together with the spandrels of the arches and the railing of the galleries and the stair-case are of elaborately cast-iron, resembling that in the galleries erected at about the same time at South Kensington. They are elaborately painted and gilt. Despite much that is good, it cannot be said that the building is happy in its arrangement, or appropriate in its decorations to the purpose it is intended to serve. Its exterior is fine in proportion, but has nothing particularly striking in its general design and details.

Dr. Birdwood resigned the post of the Curator in September 1868, Mr. G. W. Terry, Superintendent of the School of Art, Bombay, being appointed to act until Dr. W. Grey assumed charge of the post in June 1871. On the 2nd of May of the following year, the collections had been removed to the new building, and the Museum was formally thrown open to the public by Sir Seymour Fitzgerald, the then Governor of Bombay.



Dr. Grey continued in charge of the Museum till March 1877, when upon his resigning the appointment Mr. G. W. Terry succeeded him. Upon Terry's retirement in 1789, Dr. D. McDonald was appointed to the post, which he occupied until the year 1902. In June of 1903, Mr. Cecil L. Burns, Principal of the School of Art, Bombay, was appointed to the post.

The collections of specimens for many years after the transfer of the Museum to the new building consisted of Bombay products such as seeds, oils, drugs, etc., with specimens of geology and miscellaneous art products. Government only allowed a grant of Rs. 500 per year, and with this small sum it was impossible to effect purchases creditable to the Museum. In 1880 a collection of bird skins of the Presidency was purchased from the money presented to the Museum by H. H. Maharaja of Travancore and the Chief of Sawantwadi. This made a beginning of the Natural History collection.

The work carried on in course of collection of specimens for the London Fisheries Exhibition of 1883, and the Calcutta International exhibition of the following year, resulted in the acquisition of further additions to the Natural History collections of specimens and those of raw products and art manufactures in the Museum. The collection of fish specimens was highly admired in London and the Museum was awarded a gold medal for it. In the year 1885, Government increased the annual grant to Rs. 1,200.

One of the most important events during this period, was the establishment of a small library in the Museum building, containing books of reference bearing upon the specimens in the Museum. The books at present number a little over 800 volumes and new books are yearly added to the library.

In 1886 it was agreed to transfer the Museum to the charge of the Bombay Municipality, the expenses for its up-keep being met from a sum of Rs. 8,000 to be deducted from the annual Municipal contribution payable to Government for the maintenance of the police.

In the year 1903 when Mr. C. L. Burns took charge of the office of the Curator, he felt what had long since been recognised, that it was almost impossible to satisfactorily combine the popular and the purely scientific sides of a Museum. Taking

into account, therefore, the character of the visitors, and that it was hopeless to expect to carry on the Museum as a purely a scientific one, unless each section had the supervision of an expert, whose appointment depended on the amount of funds available, he proposed to adopt "the only alternative left, to re-organise the Museum upon a popular basis by making the collection as interesting and instructive as possible to the ordinary visitors and to improve the equipment and general organisation of the Museum until it reached a standard which should be attractive to the public and a credit to the Municipal Corporation." Thanks to the assistance he received from the successive Municipal Commissioners, the Museum has now been refurnished with excellent specimen cases; and to the assistance he received from the staff, the cases were re-arranged and the specimens labelled in a manner which the public appear to greatly appreciate.

In Natural History, under the former arrangement, the specimens covered a wide field of subjects most of them being inadequately represented. As a whole they were without any expert supervision, resulting in most of them being either damaged or duplicated. The consequence was that while scientific visitors failed to obtain the special information they expected, the general public turned away with a feeling of depression, as they found very little either to entertain or instruct them in shrivelled skins and bones, howsoever arranged these may have been in their order of genera and species. Mr. Burns, therefore, decided to take up and develop the popular than the scientific side of the subject; and for the purpose, had a series of cases made, in which groups of single specimens of stuffed birds and animals are exhibited in the midst of artificial scenery typical of the locality in which such birds and animals are found.

In the other division of the Museum, which contains specimens of Industries, Ethnology and Mythology, improvement was made almost on similar lines. In the case of Industries, only those industries have been taken which are found to exist in our Presidency and which are important; and every effort is made wherever possible to show by means of models and photographs the various stages in which finished articles are manufactured from the raw material.

The striking feature in regard to this Institution has always been the large number of Indians visiting it on Sundays and other Indian Holidays. The exhibits, which interest this class of visitors, are undoubtedly those with which they are very familiar, and the specimens particularly in Ethnology and Mythology were noticed to attract them by far than any other. It, therefore, became necessary to prepare clay models such as would interest them much. For this purpose the services of a clay modeller were engaged on piecework, and he was asked to make models according to instructions given to him and photographs specially taken at the Museum, with the result that the collection now exhibited at the Museum on account of its workmanship and representative character far surpasses any other that can be seen in other Museums in Western India. Thanks to the assistance I received from the Municipal Commissioner, the modeller for the past three years has been put on the temporary list at the Museum, and in view of the fact that this class of work appears to have been much appreciated, I think of making a further advance by way of showing by means of models and paintings old historic scenes dealing with the past history of Indian Kings, and depicting some important phases of Indian life, which are now fast disappearing under the influence of modern times.

One of the views which has met with general acceptance regarding the sphere of usefulness of a local Museum, is that it should be a centre for the collection and exhibition of pictorial and other records and antiquities connected with the past history of the City and the locality in which the Museum is situated. It was therefore decided to start upon a modest scale, a collection of pictorial records of the City and Island of Bombay, and despite the intervention of other work, Maps, Plans, Prints and Photographs illustrating the past history of the Island were acquired. The collection having attained dimensions sufficiently large to warrant its exhibition to the public it was thrown open to the public in the year 1918, and a catalogue compiled to supplement and explain the pictures on the walls.

Mr. Burns resigned the office of the Curator and Secretary in March 1918, when the present Curator was appointed to the post.



The late Dr. Bhau Daji, Secretary, Museum  
Committee, 1858.

## SPECIMENS OF HORN WORK, AND BONE AND IVORY.

### Horn Work from Viziadurg.

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#### CASE No. 1.

The chief forms of horn used in the Indian Art Industries are the buffalo and bison.

The buffalo horn is by far the most largely employed but the least beautiful. It is used largely in the manufacture of articles, such as combs, cups, umbrella handles, walking sticks, etc., in Bengal, Assam, Rajputana, Kathyawar, and Vizagapatam.

The bison horn is a more artistic material than the buffalo, and lends itself to better treatment. In Ratnagiri and Sawantwadi, bison horns are worked into ornamental wares. In both the places, the art is confined to a few families who are also carpenters and metal workers. The horns are chiefly imported from Malabar and Cochin.

The process of manufacture :—A portion of the horn is kept moist with cocoanut oil and heated before a fire until it becomes as soft as wax. This may take an hour or more. It is then worked, or pressed, into the required form, either with the hand or by means of moulds of hard wood, and finished off with scraping tools and small lathes. It is then polished with leaves of *Datiri* (*Ficus gibbosa*) and ornamentation is done with a fine double pointed, steel graving tool. The tools used are all extremely simple and few. A small rude lathe, a fine saw, a few triangular blades, a pair of compasses, graving tools of sizes, with a file and moulds made for the occasion, complete the necessary equipment.

1. Flower vase.
2. Do.
3. Flower vase supporting two cobras and a stand.
4. Do. do.
5. Pair of cobras on a stand.
6. Nandi with a cobra stand.

7. Saucer.
8. Powder box.
9. Model of an elephant.
10. Model of a she-buffalo.
11. Do.
12. Do.
13. Model of a Bull.
14. Do.
15. Model of a stag.
16. Do.
17. Model of a Black Buck.
18. Model of a scorpion.
19. Model of a Black scorpion.
20. Model of a Cockroach.
21. Model of a Beetle.
22. Model of a Lizard.
23. Lamp shade.
24. Carved buffalo horn.
25. Boxing glove called Nakhi.
26. Do.
27. Model of a Lamp stand.
28. Box, inlaid with Horn and Ivory (Fret work).
29. Kalamdan of Indian Horn.

### SPECIMENS OF BONE AND IVORY.

COMPOSITION AND VARIETIES OF IVORY.—Ivory is a dental substance, chiefly obtained from the tusk of the elephant, and is to be distinguished from the so-called ivory obtained from the tusk and teeth of the walrus, the narwhal, the hippopotamus and also of the mammoth and other animals once existing in Eastern Siberia and the Arctic marshes, this is known as Fossil Ivory, though not possessing the peculiar characteristics of fossils. In speaking of ivory, therefore, the tusk of the Elephant is generally referred to. This is of two varieties the African and Asiatic. The distinguishing qualities of these is that the former when recently cut is of a mellow, warm, transparent tint, with scarcely any appearance of grain, in which state it is called "transparent or green ivory" but as the oil dries by exposure to the air, it becomes lighter in colour. Asiatic ivory, when newly cut appears more like the African which has long been



exposed to the sun and tends to become yellow by exposure. The African variety has usually a closer texture, works harder, and takes a better polish than the Asiatic. Tusks of both kinds vary greatly in quality and solidity. The solid portion of the tusk extends to about half of its full length. They vary from circular to elliptical in section, and are free from vessels and pores such as occur in bone. In weight, a pair have been known to weigh 325 pounds; each of these tusks measured 8 feet 6 inches in length 22 inches in basal circumference. Tusks weighing from 10 to 16 pounds are called scrivelloes.

USES AND CENTRES OF PRODUCTION.—The demand for ivory for knife-handles, billiard balls, keys of musical instruments, mathematical scales and chess-men, also for inlaying, for thin plates for miniatures, for carving, and for various other purposes, is very great. The chief localities of production in India are Delhi in the Punjab, Murshidabad in Bengal, Mysore and Travancore in Southern India and Moulmein in Burma. Ivory carving in Western India cannot now be said to exist as an industry, the trade in ivory goods being carried on only at few places where there is a small local demand.

PECULIARITIES AND METHODS OF CUTTING IVORY.—Much judgment is required to cut up a tusk so as to apportion the various parts with economy. The ivory saw is a blade from 15 to 30 inches long and about 40th of an inch thick, set in a steel frame, and tightly stretched, so as to make a very straight cut. The outside stripes or spills are used for the handles of pen-knives, the scraps are burnt for ivory black, and the clean shavings are used for making jelly or size.

The thin plates of ivory used for making the keys of pianofortes, inlaying, and similar work are usually cut from solid blocks by means of a fine feather-edge veneer saw.

The following is the description of the method of turning bangles (at Tandur in Sind).

The piece of ivory is first peeled and made clean with a hatchet. It is then fixed to a wooden lathe and turned, with small steel turning tools. The piece, when smoothed and turned, is marked into lines. The portions so marked are then separated from the piece in successive layers; the first layer bringing out the largest bangles, the second layer, smaller ones and so on. Lastly the sides of the bangles are smoothed and polished.



IVORY CARVING AND THE PRINCIPAL OBJECTS FOR WHICH IVORY IS USED.—Ivory has been used in India since the earliest times for the production of useful and ornamental objects. Articles made from a single piece have, necessarily, been limited in size to the width and length of the tusk and therefore large vessels, such as drinking cups, etc., are rarely met with. The principal objects cut from solid ivory are small round boxes, handles of swords, daggers and knives, etc. Large articles are either built up from numerous small pieces joined together or are constructed in wood, upon which plates of ivory are fixed with cement or by means of rivets.

OF THE TECHNIQUE OF IVORY CARVING.—Ivory has an extremely hard surface and is very brittle, and at the same time is close grained. It is therefore in many respects an ideal material for use on the lathe, but in carving, it has to be treated very differently from wood. On account of these qualities above mentioned, it is necessary, in order to carve it to render it softer by artificial means, taking care at the same time that its character is not permanently altered. This is effected by wrapping the piece of ivory in wet cloths, in which it is allowed to remain for several days, the cloths being continually re-damped. After a time the ivory will be in the desired condition for carving and will be found to cut with a consistency more like the softness of cheese or wax. All the deep parts of the back ground are drilled out to the required depth with small drills, each set in a revolving handle to which motion is given by means of a bow worked with the operator's right hand, while the drill handle is held with the left. The fretted portions of the design, if such there be, are also first drilled through and then cut into shape with a small fret saw. Great care and judgment are required in deciding the sequence of work, when parts are fretted and carved in order to prevent the former from breaking away under the strain of the carver's tool.

DYEING, BLEACHING AND RESTORATION OF IVORY.—Ivory may be dyed in various colours. It is steeped into a solution of a chemical prepared to produce the required dye, and care should be taken to plunge it in cold water as soon as it is taken out of the hot dye bath, to prevent any chance of cracking. In dyeing ivory the surface should not be polished until the dye is set.

It is not easy to bleach ivory. Some recommend it being

scrubbed with sand and water, but this process is inapplicable to delicately carved work. Boiling in a solution of gelatine is preferable and is best adapted for the purpose.

*Taken from a monograph on Ivory Carving by C. L. Burns, Esq.,  
Principal, School of Art, Bombay.*

1. Apron used by Buddhist monks (made of Bone).
2. Necklace used by Buddhist monks (made of Bone).
3. Statue of the late Gaikwar of Baroda.
4. Delhi painting of the Taj.
5. Delhi painting of Kings and Queens.
6. Gulabdani.
7. Motidani.
8. Kusum Box.
9. Do.
10. Do.
11. Model of an Akali.
12. Set of Indian Backgammon with two dice (made of Bone).
13. Model of a tree.
14. Eleven Specimens of Human Figures and animals (miniatures).
15. Rice-grain, containing an inscription of a text from the Koran.
16. Carved Ivory Holder.
17. Elephant with Howda, Delhi carving.
18. Inlaid fret box.
19. Pair of Attardanees from Nathdwara.
20. Do.
21. Perforated box from Nathdwara.
22. Hand rattle from Nathdwara.
23. Set of 3 scent bottles from Nathdwara.
24. Peacock from Japan.
25. Lotus Flower.
26. Model of a Milk-maid.
27. Elephant.
28. Box.
29. Elephant inlaid with stones from Japan.
30. Round small box.
31. Do.
32. Do.

33. Elephant mounted on a rolling ball (from Japan).
34. Model of Radha-Krishna.
35. Perforated box.
36. Model of Hanuman.
37. Model of Shankar.
38. Model of Lakshmi.
39. Model of Sri Krishna Murlidhar.
40. Inlaid letter pad.
41. Box with carved figures of Moghul emperors.
42. Delhi Ivory painting "Elephant with a Howda."
43. Vegetable made of bone from Japan.
44. Sri Krishna on the Kalya (from Burma).
45. Model of Maruti carrying Dronagiri (from Burma).
46. Carved bowl in 9 pieces (from Japan).
47. Set of elephants.
48. Model of a sparrow mounted on a tree.
49. Carved frame from Japan.
50. Vegetable made of bone from Japan.
51. Egg showing a chicken hatched from Japan.
52. Set of 8 paintings on Ivory of old Persian kings.
53. Round small box.

#### Models.

Model of an ivory carver.

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### SPECIMENS OF INDIAN BOATS.

#### CASE No. 2.

The native craft of Bombay may be divided into two classes, (1) the sea-going craft and (2) the Harbour craft. The first class includes vessels which are engaged in the coasting trade and those which undertake long voyages to the coast of Malabar, the Persian Gulf, Ports of Arabia, Aden and Zanzibar and are known as Buglas, Potias, Puttemarees and Battelas. In the second class are included the Machwas, Padavs, Jolly-boats and Tonis engaged in the Native passenger and cargo traffic between Bombay and the adjacent parts of the mainland as Karanjia, Rewas, Panwel, Thana. The fishing boats are included

in the harbour craft. The following specimens are exhibited in the case :—

1. Canoe from Canara.
2. Canoe from Canara.

These are built at nearly all the coast villages, the lower part being made by scooping out the trunk of a tree. These are steered by a rudder and are employed in carrying wood and other forest products.

3. Tony.

This is a small canoe-shaped passenger boat peculiar to Bombay, usually hollowed out of a single tree and propelled by both oar and sail.

4. Jolly-boat. (As used by the Custom Officers.)

Used by the Bombay Custom Department. Presented by Mr. S. D. Smith of the Custom Office.

5. Hodi.

This is a common fishing boat double-ended with one mast and one lateen sail. These are very fast sailers and may be pulled or sailed. These are built at nearly all coast ports south of Bombay, Alibag, etc.

6. Potia.

This is the native craft of the coast of Cutch and is somewhat similar in appearance to a Bagla, being a two-masted decked vessel. These are built at Cutch-Mandvi and also at other ports on the coast of Kathiawar; also at Manglore, Calicut. These may be considered the ocean tramps of the native craft, travelling almost everywhere in Indian waters. The Nakoda—the man in charge has very little knowledge of the Nautical science.

7. Machwa.

This is a harbour craft and several varieties of vessels are collected under this name, *e.g.*, there are the fishing matchwas, these cargo matchwas and matchwas which carry on an extensive passenger traffic. These are all one-masted vessels. These are built at various ports on the western coast. Large numbers are built at Sewri, Uran, Bassein, etc.

8. Batela.

This is a two-masted vessel but a very roughly constructed one. These are fairly numerous in Bombay waters where they carry on a coasting trade. These are built chiefly at Bassein, Surat and Bulsar. These are fine weather vessels, seldom venturing far from the coast. These resemble according to Mr. Low, author of the History of the Indian Navy, the earliest vessels of the Portuguese. The resemblance in present day is however considerably modified.

9. Full rigged Ship.
10. Yatch "Eagle," Custom's Boat.
11. Model of a Boat used on the Kanara Coast.

Specimens Nos. 9, 10, 11 are exhibited on the wall. They are hand-made models, cut out mostly with a pen-knife.—The work of the late Mr. G. B. Payne, Coast Guard Inspector, Salt Dept. Presented to the Museum by Miss H. E. Payne.

Authority consulted.

"The Native craft" by Com. N. F. J. Wilson, R.T.M.

## SPECIMENS OF LAC-WARE IN THE BOMBAY PRESIDENCY.

### CASE No. 3.

Lac is the resinous incrustation formed on the bark of trees through the action of the Lac insect (*Coccus lacca*). This insect is indigenous to the forests of India and occurs in aggregated masses round the twigs of certain trees especially (*Acacia arabica*) the Babul, (*Butea frondosa*) the Palas, the Pipal. (*Ficus religiosa*.)

The incrustated twigs are removed and cut up into pieces. These form stick lac. They are spread upon a flat floor and a roller passed over them by which the resinous crust is broken from the twigs. The wood is carefully removed, and the resin thrown into tubs of water, where it is beaten either with a wooden pestle or trodden under foot. The liquid becomes red coloured and one washing after another is performed. By washing, the resin is freed from impurities and now exists in fine pulverized or granular state. This is then placed in bags, which are stretched across charcoal fires, until the lac begins to melt. The bag is then twisted in opposite directions over glazed porcelain troughs or the stems of a plantain tree slit down the middle. Through the pores of the cloth the melting lac is forced and dropping upon the troughs, it forms into cakes called Shellac. This is then melted until rendered plastic. It is then placed on a stone and a small quantity of the required pigment (previously dissolved in water or oil) is deposited within a hollow formed on the surface. This is then closed over and the lac hammered and pulled out with the hand

until the colour is uniformly mixed. The hammering partially maintains the heat and as the operation proceeds the mixture gradually assumes the consistence of India-rubber. The coloured lac is then formed into sticks of varying degrees of hardness and of the required length and thickness. These sticks of sealing wax are known as Battis and are the form in which both the coloured lac is applied to the wood articles it is intended to cover or decorate.

The turner Kharadi with his lathe is met with in every village of India. He prepares toys, nests of boxes, bed posts and common articles of a like sort. The wood selected by the turner depends upon the purpose intended, but generally light coloured and uniformly grained woods are selected. After the article is prepared and smoothed, a stick of coloured lac (batti) is pressed against it, as it revolves on the lathe. The heat generated by friction melts the lac and thus colours the wood regularly. A small piece of hard wood is next pressed firmly on the revolving articles, when the colour is effectually diffused. Lastly a cotton rag is dipped in sweet oil and held against the revolving object, when the lac takes a polish that it never subsequently loses.

#### Specimens of Plain coloured Lac-ware.

1. Glass.
2. Do.
3. Do.
4. Do.
5. Do.
6. Do.
7. Do.
8. Dish.
9. Do.
10. Box.
11. Do.
12. Do.
13. Do.
14. Tumbler.
15. Pot.
16. Do.
17. Do.



18. Pot.
19. Jar.
20. Do.
21. Do.
22. Kalamdan from Sawantwadi.
23. Cup made of paper and coated with lac varnish from Sawantwadi.
24. Dish made of paper and coated with lac varnish from Sawantwadi.
25. Winnowing Scoop made of paper and coated with lac varnish from Sawantwadi.
26. Paper Basket coated with lac varnish from Sawantwadi.

For articles of a more costly or elaborate description the wood after being turned on the lathe is polished with fine powder made from broken pottery, which has the effect of filling up the pores. Should cracks or joints exist, these are plugged with wood or waste lac and at the same time pieces of thin cloth are glued across such imperfections. Repeated coats of a mixture of glue and pottery dust are now applied, each successive coat being polished with a sort of chisel made from the leaf stalk of a palm. By this process a smooth and uniform surface is produced, and upon this base the best plain lac work is produced. In addition to plain coloured work, decorations of various descriptions have been developed. The best known are Abri or Cloud Work, Atisi or Fire Work, Nakshi or Pattern Work, and Painted Ornament.

**ABRI OR CLOUD WORK.**—The turned article after being polished in the manner described above is coated all over with yellow lac of a soft quality. The operator takes a batti or stick of red or orange lac which is harder and sharply pointed, and by allowing the hard batti to touch the revolving object interruptedly, numerous irregular spots or streaks of red or orange are imparted to its surface. By repeating the same process with a batti of black lac of a softer texture black borders are communicated to the red spots and thus by various modifications of the processes briefly indicated are produced the cloud-like effects that have given the name abri to this kind of lac ornamentation, which is practised by lac workers throughout India, though the finest specimens come from Sindh.



1. Fruit Tray.
2. Do.
3. Cylindrical Box.
4. Do.
5. Do.
6. Dome-shaped Box.
7. Do.
8. Do.
9. Do.
10. Do.
11. Round-shaped small Box.
12. Do.
13. Do.
14. Do.
15. Do.
16. Do.
17. Do.
18. Ball-shaped Box.
19. Do.
20. Round Box.
21. Ball-shaped Box.
22. Do.
23. Round Box (small size).
24. Do.

ATISI OR FIRE STYLE.—The peculiarity of this style is that after the polishing process is completed, the article receives a coating of finely divided tin foil made into a paste with glue, which may be either uniform in texture or divided into a multitude of minute dots. Over the top of this tinfoil (coating) a coating of yellow or red lac is given with the result that the article attains a rich fiery colour, which glows with a metallic lustre. When finished the surface is polished on a lathe by means of an agate, and imparts a brilliancy and hardness otherwise unobtainable.

1. Gulabdani.
2. Do.
3. Cradle.
4. Flower Pot.
5. Do.

NAKSHI OR PATTERN WORK.—In this class of work the article is firstly coated with one colour, over this is placed a second, a third, a fourth, each being spread uniformly over the surface. The battis employed are for the most part soft and water-prepared. The first colour is usually yellow, the second red, the third green, and the last black. With a fine chisel or style the lac coated surface is now scratched, the hand being made to move lightly or press heavily as may be necessary to bring out the colour required from the layers beneath the surface. In this way designs containing any of the colours lying superimposed may be worked out with utmost delicacy and elaboration. The finest work of this character is produced in Hyderabad (Sindh).

1. Tumbler.
2. Do.
3. Do.
4. Cylindrical Box.
5. Dome-shaped Box.
6. Do.
7. Ball-shaped Box.
8. Round-shaped Ball.

PAINTED ORNAMENTATION.—In this class of work, the articles after being polished receive a coating of white lead and glue upon those portions it is intended to decorate with paintings. The picture is executed in water colour paints, and when quite dry the picture is varnished with lac dissolved with spirits of wine. The article is then placed on the lathe and the design is completed by one or a combination of methods of lac ornamentation before described and is finally polished. Hyderabad (Sindh) is the centre from which most of the best work of this description comes.

- 1 to 6. Dome-shaped Boxes.
- 7 to 10. Flower Pots.
- 11 to 12. Fruit Trays.
13. Round Dish.
- 14 to 26. Dome-shaped Boxes, small.
- 27 to 30. Ball-shaped Boxes, small.
31. Candle-stick.
32. Jar.
33. Round Dish.

**TIN FOIL ORNAMENTATION.**—A fragment of coloured lac is placed upon a tin foil and held over the fire, until the lac completely covers the sheet. The foil covered in this manner is employed in the manufacture of imitation jewellery, in the production of tinsel decorations and also in combination with the other classes of lac decoration to wood work.

1. Dome-shaped box.
2. Do.
3. Cylindrical box.

**Specimens of Plaque. Made of Papier-machie and varnished with Lac Varnish.**

*Panels for decoration purposes. (Presented by the Nazir of Juma Mosque, Bombay.) Made in Punjab.*

**Models.**

Model showing how wood is lacquered.

**Raw materials.**

- Granular lac.
- Resinous crust.
- Stick lac.
- Shellac.
- Battis or coloured lac.

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**SPECIMENS MADE OF AGATES.**

**CASE No. 4.**

**(a) Specimens made of Agates.**

The agate is a quartz stone usually containing silica, with various proportions of alumina coloured by oxide of iron. It is generally found in round nodules or in veins in trap rocks, and sometimes in beds of streams. The chief varieties of agates are (1) Calcedony with colours in parallel bars, (2) Cornelian or red calcedony, (3) Mokha stones, (4) Moss agates, (5) Blood stones, (6) Plasma, a grass, green-stone, and (7) Chrysoprase, an applegreen stone. These are found in different parts of Gujrath, within a radius of about 120 miles of Cambay. The Bhils are the miners.

**NATURAL STATE.**—In its natural state, the agate is of a dull cloudy brown or yellow colour. After being dug out of the

mines they are divided into two classes, those which should and those which should not be baked. The former are spread out in the sun, and are then baked in earthen pots by means of a fire made with goat or cow-dung cakes. By exposure to the sun and fire, the colours of the stones are deepened and become more pronounced. The stone then passes through the three processes of Sawing, Chiselling and Polishing.

**SAWING.**—When a stone is to be sawn, it is firmly fixed in a strong frame composed of two uprights, joined at the foot by a bar, the cement holding the stone being made of bees' wax and cloth fibres. The saw is a thin toothless iron plate, one edge of which is fixed in a light wooden frame, and according to the size of the stone is worked backwards and forwards by one or two men. A mixture of ground emery, fine sand and water is kept dropping into the cleft gradually made by the saw and these materials assist in cutting through the stone.

**CHISELLING.**—To chisel into shape, the stone is laid against the edge of a spike driven into the ground till only the head is left above the surface. The workman then strikes with a horn-headed hammer that portion of the stone to be broken off, till all roughness has been removed.

**POLISHING.**—The article is now handed over to the polisher. He takes it to a platform, whereon are two strong wooden uprights and between the up-rights a wooden roller, fastened into a head at one end. This roller works on an iron spindle or axle. On the one end, the axle is screwed and fitted with a nut to which a plate or disc can be made fast. The grinding or polishing plates are made of copper, wood or emery mixed with seed lac. The emery is carefully powdered, and its preparation varies in fineness according to the nature of the work. Copper plates are only used for polishing very hard stones, and wood for softer variety.

The disc best suited to the stone to be polished is fastened to the roller by the workman who squatting on his hams, steadies the machine with his foot. A bow with its string passed round the wooden roller, is held in his right hand and by moving the bow backwards and forwards, the roller and with it the polishing plate is whirled round, while the article to be polished is held in the workman's left hand, and is pressed against the outer face of the polishing disc as it revolves.

**BEAD-MAKING A SPECIAL PROCESS.**—After the beads have been chiselled into shape to smooth their surfaces, a number of them are fixed in wooden or bamboo clamps, and rubbed on the coarse and hard smoothing stone. Next they are clasped in a grooved cramp and rubbed along a wooden polishing board. The surface of this board is cut into grooves and is coated with a composition of emery and seed lac. To give them their final brilliancy, beads are polished with a mixture of emery dust and fine carlinian powder placed into a strong leather bag about 1 foot by 2 feet. The mouth of the bag is tied and a flat leather thong is passed around its centre. Seated at opposite ends of a room, two men each holding one end of this leather thong, drag the bag backwards and forwards, making it and its contents revolve. This process lasts from ten to fifteen days, during the whole of which time the bag is kept moistened with water. After the polishing, the beads are bored by a diamond-tipped steel drill, water being dropped into the hole through a thin narrow reed or metal tube. Knife handles are prepared in the same way.

**MANUFACTURED ARTICLES.**—In making cups, saucers and other hollow articles, the outside is first chiselled into shape and ground on the smoothing stone. To hollow the inside, the diamond-tipped drill is worked to the depth of a quarter of an inch all over the upper surface until it is honey-combed with drill holes. The spaces between these holes are then chipped away till a hollow is formed, and the process is repeated until the desired depth is attained. The inside is then polished on a cone composed of the same materials as the polishing discs. Flat ornaments, such as paper-cutters, paper-weights and ornamental slabs are sawn into layers of the required thickness and polished in the ordinary way. The working of agates takes a considerable time, but when the stones are fine specimens the results repay the labour expended upon them.

**ARTIFICIAL AGATES.**—The introduction of Artificial Agates from Europe has seriously interfered with the industry in recent years, and it is very doubtful if the working of the natural stones can be profitably carried on, in face of this competition. Certainly more modern appliances must be used to simplify and expedite the grinding and polishing processes, if it is to survive in Cambay; and as the work-people employed in the industry are uneducated and the industry itself is a small one, it is unlikely

that these appliances will be introduced. It is therefore to be feared that in a few years time the Agate industry of Cambay will be numbered with the many minor handicrafts of India that have already disappeared.

1. Necklace.
2. Do.
3. Do.
4. Do.
5. Do.
6. Do.
7. Do.
8. Do.
9. Do.
10. Amulet.
11. Do.
12. Knife Handle.
13. Set of Buttons.
14. Do.
15. Do.
16. Do.
17. Eleven different Ornamental Specimens.
18. Moss Agate.
19. Do.
20. Do.
21. Do.
22. Do.
23. Agate Slab.
24. Do.
25. Do.
26. Box made of Artificial Agate.
27. Do. do.
28. Box made of Imitation Agate.
29. Do. do.
30. Imitation Agate.
31. Paper-cutter of Artificial Agate.
32. Do. do.
33. Knife Handle of Artificial Agate.
34. Do. do.
35. Necklace made of Agate.
36. Set of Indian Chess Pieces.



37. Set of Indian Backgammon.
38. Yellow Agate slab.
39. White Agate slab.
40. Specimen of a blood-stone.
41. Do.
42. Gun made of Agate on wheels.
43. Eleven different pieces.

**(b) Specimens showing the various stages in the process of Manufacture.**

1. Raw Agate.
2. Fired Agate.
3. Agate partially skinned and opened.
4. Agate skinned and shaped,
5. Agate skinned and refined called " Guldana."
6. Guldana polished on the wheel, 1st stage.
7. Do. do. 2nd stage.
8. Phallas for Buttons.
9. Partially shaped Buttons.
10. Buttons cut and polished on the wheel.
11. Phallas for making beads.
12. Agates skinned for beads.
13. Agate shaped into round and rough form for beads.
14. Beads polished on the stone.
15. Beads polished and bored.
16. Beads polished and cut.
17. Rough shaped pieces for " Modandana".
18. Agates skinned and shaped for " Modandana " and " Chassaya."
19. Rough shaped pieces for Chassaya.
20. Final shaping of the pieces for Modandana.
21. Modandana polished on the wheel.
22. Modandana bored.
23. Chassaya cut and bored on the wheel.
24. Modandana and Nagina.
25. Modandana and Nagina polished on the wheel.
26. Gilloda raw black Agate.
27. Gillodas, burnt and shaped.
28. Gillodas, shaped by rubbing on the stone.
29. Partially polished gillodas.



30. Gillodas polished by means of a bag.
31. Gillodas polished and bored.
32. Agate skinned and shaped for rings.
33. Agate bored for rings.
34. Rings polished on the wheel.
35. Agate.
- 36-47. Agate polished.
- 48-49. Chalcedony.
- 50-68. Chalcedony polished.
69. Chalcedony green.
70. Chalcedony, green, polished.
- 71-72. Carnelian.
- 73-75. Carnelian, polished.

### (c) Instruments used.

1. Spike used for making Beads.
2. Spike used for making Guldana.
3. Do. do.
4. Shingadi for making Beads.
5. Do. do.
6. Do. do.
7. Maradia for skinning Agates.
8. Do. do.
9. Do. do.
10. Apparatus for boring Agates.
11. Lathe with four wheels.
12. Apparatus for holding water pot.

### Photographs.

1. Workshop for boring Agates.
2. Do. do.
3. Workmen shaping Guldana, 1st stage.
4. Do. do. 2nd stage.
5. Workmen cutting and polishing Agate stones.
6. Do. do. do.
7. Do. do. do.
8. Workmen cutting Agate stone.
9. Workshop for grinding Agates for manufacturing articles.
10. Workmen smoothing edges of the beads.
11. Workmen shaping beads.

12. Workmen finishing Modandana.
13. Workmen grinding Agates for preparing beads.
14. Agate merchants in Cambay.
15. Photograph of a Gun made of Agate.
16. Agate Workshop in Cambay.
17. View of Cambay.
18. Do.
19. Do.
20. East India Company's Factory Building.

## SPECIMENS OF CARVED STONE WORK.

### CASE No. 5.

The specimens of stone carving exhibited in the case are made of alabaster, marble and soap-stone.

**PROCESS OF WORK.**—A block of stone intended for work is first cleared of its superfluous parts by means of a thick and long chisel, with a blunt point. The stone is then finely dressed. The design is drawn with a pencil and the background roughly cut with chisels and drills until it attains the required depth; the design is then worked out in detail and when completed is smoothed and polished.

**TOOLS EMPLOYED.**—The tools employed are simple, namely, hammers of different sizes, chisels without handles, files, saw, measures, drills, etc. For polishing small work a grinding wheel made of corundum powder and lac are used.

Inlaying is chiefly done on marble. In addition to country marble obtained from Makran (Jeypur), white, black and blue Italian marble is freely used. Other stones are used for decorative purposes such as cornelian, agates, lapis-lazuli, cobalt, etc. These are obtained in small blocks and are sawn into thin slabs about half an inch thick before being used for inlaying.

For sawing a stone, a wooden platform to which is attached a piece of wood in cross section, is used. Sealing wax is applied to this piece of wood for the purpose of holding the stone in position. It is then sawn by means of a bow with two or three strings of steel, the sawing operation being facilitated

by means of corundum powder and water being poured into the cut. The design is then transferred and either the design or the background is cut out with a fine chisel to the required depth and size. The inlayer next cuts very thin tin templates according to the size of the different parts of the design, and when all the templates are completed, the work of cutting the stone of the proper hue according to the size of the template is commenced. The edges of the stones to be inlaid are then ground on a grinding wheel. When all the parts of a design are thus made ready, the whole design is fitted into the portions of the marble cut to receive them and are fixed with a cement made of resin, wax and white lead. The inlay, groundwork or joints are then ground to an even surface with soft white sand-stone and water and the final polish is imparted by friction with a cloth in which finely powered pottery is tightly wrapped.

**SOAP-STONE.**—The manufacture of ornamental work in soap-stone in Agra has been in vogue for the last sixty years. The same workmen, who prepare the inlaid marble work are employed in this industry. The stone being a very soft one admits of delicate intricate treatment in design and workmanship.

*Authorities consulted :—Stone carving in the Bombay Presidency.*

*Stone carving and Inlaying in Southern India.*

*Stone carving and Inlaying in Panjab. Indian Art at Delhi.*

*Official Report of the Calcutta International Exhibition, 1883-1884.*

#### **Jaipur work.**

1. Figure of a Ganpati.
2. Figure of Dattatraya.
3. Figure of Hanumanji.
4. Do. do.

#### **Inlaid work from Agra.**

1. Dish.
2. Do.
3. Do.

- 4 Dish.
- 5 Chess-board.
- 6 Inlaid box.
- 7 Black stone box inlaid with the drawing of a bird.

### **Soap-stone from Agra.**

- 1 Carved Hooka.
- 2 Round dish.
- 3 Do.
- 4 Do.
- 5 Octagonal dish.
- 6 Dish carved in leaf design.
- 7 Do.
- 8 Carved square box.
- 9 Do.
- 10 Hexagonal box.
- 11 Carved Tortoise.
- 12 Do.
- 13 Carved model of a snake.
- 14 Do.
- 15 Model of a Mahammadan tomb.
- 16 Vase with top cover.
- 17 Do.
- 18 Do.
- 19 Do.
- 20 Pot for preserves.
- 21 Do.
- 22 Do.
- 23 Tumbler.
- 24 Cup-shaped pot.
- 25 Do.
- 26 Carved box.
- 27 Carved Round Dish.
- 28 Do.
- 29 Do.
- 30 An old Rajput Warrior in alabaster, presented by Mrs. Avantikabai Gokhale.

### **Stone Carving from Burma.**

- 1 Statue of a Burmese Goddess, captured by Capt. George Nesbit in the last Burmese War.

### **Specimens from Europe.**

1. Dog in alabaster.
2. Lion in alabaster.
3. Lion in alabaster.

### **Specimen from China.**

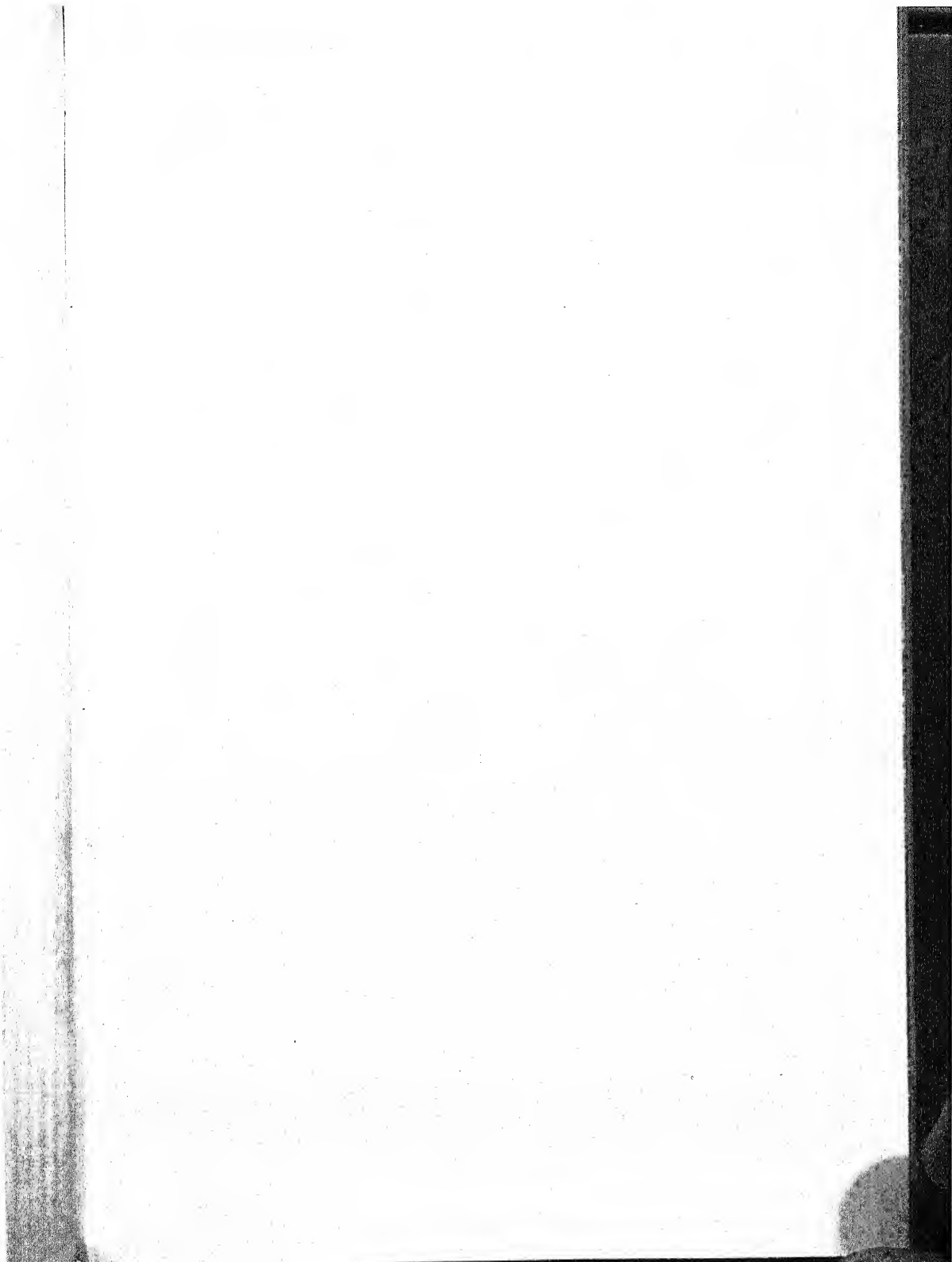
1. Specimen of a River-boat.
2. Specimen of a Jar.
3. Three specimens of Chinese Dragons.
4. Eleven specimens of different figures.

## **GLASS AND GLASS INDUSTRY.**

The raw materials used in the manufacture of glass are silica used in the form of pure quartz, pulverised flint, and sand of degrees of purity varying in proportion to the quality of the glass required ; lime, potash obtained from wood ash, sulphates and carbonates of soda, and broken fragments of glass called Cullet. These materials are first finely ground and mixed in certain proportion as required for the different kinds of glass, and the mixture so formed is commonly called " the batch." When heated, it yields pure white glass. The melting pots used in a glass manufactory are called crucibles, and these are made of the finest fire clay. Great amount of labour and care have to be expended in their manufacture, for they readily crack and give way under the influence of the intense heat of the furnace.

The construction of the furnace is just as important as that of the crucibles, for on it depends the entire success of the manufacturer. The chief point among others to be noted in its construction is its capacity to produce and concentrate great heat.

The mixture being ready is put into a crucible, and a number of crucibles are used at the same time, and these are placed in the furnace. It is now necessary to maintain a high temperature. As the mass begins to melt, it settles down, when a fresh quantity of the batch is added, the process being repeated till the crucible is full of liquid glass. Whilst the fusion is taking place, the mixture is carefully tested by means of test pieces, and when it is ready, the heat in the furnace is reduced in order that the glass may be brought into a state capable of being worked.





**The late Sir Dr. Birdwood, Secretary, Museum Committee  
and Curator & Secretary of the Museum, 1858-1868,**



The means by which the melted glass is caused to assume various forms for use are (1) by blowing, (2) by casting, (3) by pressing in moulds. Minor manipulative processes, which do not fall under any one of these heads, are also called into action.

GLASS is made into FLAT GLASS, such as Crown glass, Sheet and Plate glass, HOLLOW GLASS, such as bottle tube and gauge glass; PRESSED AND MASSIVE GLASS, such as Flint and Optical glass, Rod glass, etc., and lastly Coloured.

Crown glass was in the early part of the last century the only form of window glass made in England, but since the introduction of sheet glass, its use gradually declined. The composition of raw materials used in making these two kinds of glass is the same, but the reason for use of the latter in preference to the former kind of glass, is that sheet glass by certain manipulations and the use of improved contrivances, can be produced in sheets of greater dimensions and is free from certain blemishes that are common in Crown glass.

#### **How Sheet Glass is made.**

The metal being ready as previously explained, the operator dips into it an iron pipe, heated at one end which takes off the glass and gathers on it, as much as he requires. About 20 pounds on an average are taken. He then places it in the hollow of a wooden block, which has been hollowed out so that, when the metal is turned, it will be formed into a solid cylindrical mass. When the desired form is obtained and the metal cooled, the workman begins to blow the metal at the same time turning it into the hollow, till the metal assumes the form of a cylinder. This is now allowed to cool, and when properly smoothed and squared, it is split by the use of a diamond cutter. It is then flattened by introducing it into a heated chamber and annealed. The sheet is then smoothed and polished. Polished sheet glass is now in great demand for photographic purposes, for framing engravings and generally for all purposes, where a fine true surface combined with lightness and thinness is required.

#### **How Plate Glass is made.**

This is manufactured by a different process. As this is thicker than blown sheet glass, it is necessary that the metal should be prepared from the purest possible materials, and that great care

is required to be taken in the manipulation of the different processes. The materials are melted in the furnace and the molten mass is poured on a casting table fitted with a cast-iron roller behind two cast-iron plates, which are worked by means of an apparatus. The plates, as they are made to travel onward, carry in front of them all the semi-fluid mass except the uniform layer coating of wax.

**Pressed Glass :** Although this kind of work has existed from ancient times, it is only in modern times that the industry has developed. A metal that melts at a comparatively moderate heat and does not quickly pass from the plastic stage, is required for this process, as it has to fill the intricacies of the mould and must also be susceptible of "fine polishing," an operation which consists in sufficiently re-heating the thin superficial stratum of the glass, whereby the roughness and obscurity of the surface incidental to moulding is removed. The moulds are made of iron or bronze and the internal hollow of the article is produced not by blowing, but by means of a plunger of the press under which the mould is pressed. The required quantity of the metal being dropped into the mould, the plunger descends and forces the metal into all the parts of the cavity, completing immediately the formation of the article which is then "fire polished" and annealed. In this way glass with elaborate facets, bosses, flutings and other bold ornaments are produced.

The materials employed in making glass for bottles are common sand, glass lime, brick clay and common salt. After these are heated, and the liquid sufficiently cooled, the gatherer gathers on an heated iron pipe, a sufficient quantity of the metal. This is then passed on to the blower, who, while blowing, rolls the metal upon a stone, at the same time forming the neck of the bottle. This is then put into a mould of the shape of the bottle wanted, and blowing is again continued till the desired form is attained. The articles is then handed over to the finisher, who severs it from the pipe, and finishes it off by shaping the mouth and the neck. It is then annealed.

Glass tubes are made by gathering glass on a blow pipe, which is slightly blown so as to form a thick walled, elongated globe. To the end of this globe, opposite the blow pipe, a pontil rod is attached, and the two workmen move backwards one from the other, drawing out the tube as they recede. When the tube

reaches the desired gauge, its surface is fanned so as to "set" the glass, and prevent further attenuation. In drawing out tubes of large gauge, the operators recede at a slow rate, and when small tubes are required, they move at a smart walking pace. Solid glass objects are made from glass rods, made in the manner described above.

Bangles are made either plain or ornamented, the plain ones being made in different colours. The ornamentation is chiefly produced by means of colouring it with lac applied to the glass while it is warm, or by means of melting small points of coloured glass rods and applying them. Sometimes gold and silver foil is used in ornamentation.

Other kinds of articles are mostly manufactured by blowing, and these consist of chimneys, and bottles used chiefly for keeping scents and carrying Ganges water by the pilgrims. There is nothing remarkable in the process of their manufacture. It is interesting in this connection to state that in Punjab, the industry of making glass globes and coating these on the inside with an amalgam made of tin, lead and mercury, is very striking. The Indians use them for hanging them up from ceiling as ornaments, or these are broken and sold in pieces to be cut into different shapes for spangles employed in decorating women's dress.

Books Consulted :—Encyclopædia Britannica.

Spon's Encyclopædia of Manufactures and Raw materials.

Journal of Indian Art.

Punjab Manufactures.

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## SPECIMENS OF GLASS MANUFACTURED IN INDIA AND OTHER COUNTRIES.

CASE No. 6.

### **Specimens of Glass made by the blowing process.**

1. Two glass founts from Satara (Messrs. Oagle & Co.)
2. Thirteen glass globes of assorted sizes from Satara (Messrs. Oagle & Co.)
3. Fifteen chimneys of assorted sizes from Satara (Messrs. Oagle & Co.)

4. Three electric Lamp shades (coloured) from Satara (Messrs. Oagle & Co.)
5. Three pieces of Silvered Glass Globe used in embroidery.

#### **Specimens of Plain Glass.**

1. Two pieces of Silvered Glass.

#### **Specimens of Glass made by pressing inmoulds.**

1. Flower vase from Satara.
2. Cut-glass tumbler from Jeypur.
3. One glass scent bottle.
4. Two glass dishes ornamental from Satara.
5. One roofing tile from Satara.
6. Six specimens of glass showing consecutive processes of making lenses from Jena.

#### **Specimens of Coloured Glass.**

1. Five ornamental coloured globes from Satara.
2. Five specimens of coloured glass from Europe.

#### **Specimens of Cut Glass.**

1. One case containing 14 imitation glass gems.
2. One wine glass and one saucer made in Moscow.

#### **Specimens of Embossed Glass.**

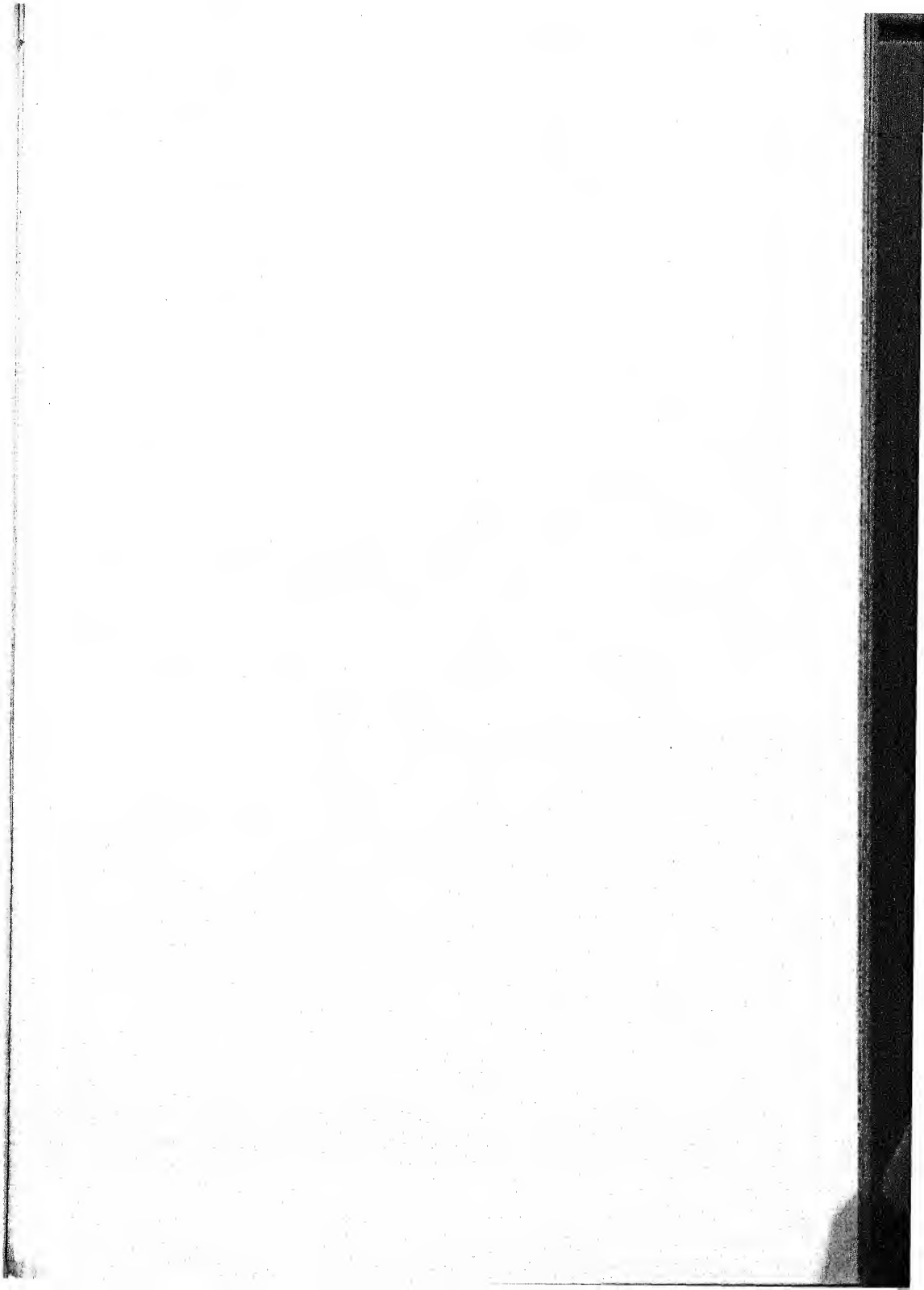
1. Five specimens of embossed glass.

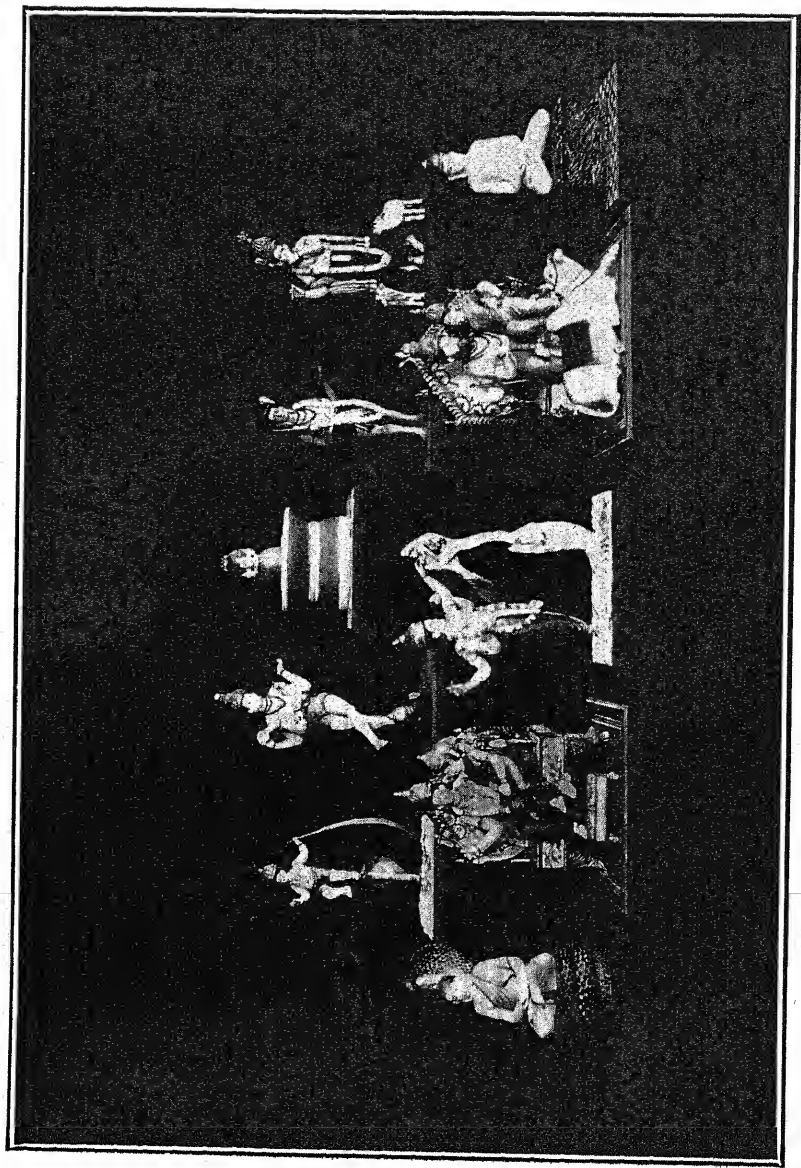
#### **Specimens of Ancient Glass.**

1. Old Assyrian jar.
2. Two boxes containing specimens of ancient Egyptian glass presented by Mrs. Burns.

#### **Specimens of raw materials used in making glass.**

1. Alum.
2. Powdered stone.
3. Glauber salt.
4. Pieces of crude glass.
5. Bangles made of glass.
6. Quartz.
7. Borax.
8. Soda ash





Figures modelled in clay of the Images of Deities worshipped by the Hindus.



9. Manganese.
10. Oose.
11. Burnt Oose.

**Models showing different processes in glass making.**

1. Model of a Kasar-Dealer in glass bangles.
2. Model showing how glass vessels are blown.
3. Model showing how glass is blown.
4. Model showing how glass rods are made.
5. Model showing how sheet glass is made.
6. Model showing how glass is blown in Punjab.
7. Model showing how glass is melted in Punjab.

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**CASE No. 7.**

1. Model of the Idol of Vishnu.
2. Model of the Idol of Lakshmi Narayan.
3. Model of the Idol of Matsya incarnation.
4. Model of the Idol of Kurma incarnation.
5. Model of the Idol of Varaha incarnation.
6. Model of the Idol of Narshiva incarnation.
7. Model of the Idol of Vaman incarnation.
8. Model of the Idol of Tri-vikram as worshipped in Madras.
9. Model of the Idol of Parashram incarnation.
10. Model of the Idol of Rama incarnation.
11. Model of the Idol of Krisna incarnation.
12. Model of Krisna worshipped as "Navanita Nritya Murti."
13. Model of Krisna worshipped as "Gan Gopal."
14. Model of Krisna worshipped as "Kaliya Mardana Krisna."
15. Model of Krisna worshipped as a child.
16. Model of Krisna worshipped as a child upon a Vata leaf  
symbolical of God brooding upon the ocean of Chaos  
or Eternity.
17. Model of the Idol of Buddha incarnation (as conceived by  
the Puranas).
18. Model of Buddha as worshipped by the Buddhists.
19. Model of the Idol of Kalki incarnation.
20. Model of the Idol of Dattatraya.
21. Model of the Idols of Vithoba and Rukhmai.
22. Model of the Idol of Civa as Creator.
23. Civa as Creator worshipped in the form of a Linga (of agate).

24. Civa as Creator worshipped in the form of Linga (of spatika).
25. Model of the Idol of Civa worshipped as Bhairava.
26. Model of the Idol of Civa worshipped as a Yogi.
27. Model of the Idol of Civa worshipped as Mahadev with the Idol of Parvati.
28. Model of the Idol of Civa worshipped as Natesha.
29. Model of the Idol of Ganpati.
30. Model of the Idol of Subramanya or Kartik Swami.
31. Model of the Idol of Brahma.
32. Model of the Idol of Indra.
33. Model of the Idol of Kamadev.
34. Model of the Idol of Kubera.
35. Model of the Idol of Surya or the Sun-God.
36. Model of the Idol of Chandra of Soma.
37. Model of the Idol of Yama.
38. Model of the Idol of Agni or the Fire-God.
39. Model of Hanuman.
40. Model of Ananta or Jalasayeen.
41. Model of the Idol of Lakshmi.
42. Model of the Idol of Saraswati.
43. Model of the Idol of Parvati worshipping Civa.
44. Model of the Idol of Parvati worshipped as Umba, Uma, etc.
45. Model of the Idol of Parasnath or Jinadeva.

Parasnath was the immediate predecessor of Mahavir, the Reformer of Jainism as we see it to-day. He is supposed to have been an historical person and did much to draw together and improve the discipline of the followers of Jainism of his time. He is said to have given up worldly life when he was about thirty, and after practising austerities for some time, he obtained "Kevala Jnyan," from which time he began to preach. He is said to have preached for about seventy years, when he obtained deliverance on Mount Sumet Shekara in Bengal, now known as Paraswanath Hill.

### IMAGE WORSHIP IN INDIA.

The Sankhya System of Hindu Philosophy teaches that the human soul can only attain final liberation through the knowledge of God, and one of the means to attain this knowledge is "Brahma-chintana" or complete concentration of the

human mind on the divinity. The complete concentration could be obtained through Yoga, which is defined by Patanjali as the process of fixing the mind on some object well defined in space. The practice of Yoga, in its early stage, therefore meant the use of some object, the presence of which would be felt by the senses, till they were so developed that the mind could of itself conceive the existence of the object divested of its form. Such object well defined in space and employed for the purpose of concentrating the mind, was termed by the Vedantists 'Prateek,' and such Prateeks resembling the token of a chosen deity, were recommended for use in the Shandyoga Upanishad and others of the times. It appears, therefore, probable that the use of images was co-eval with the practice of Yoga, which certainly was well known at this time when the Bharati War was fought about 1400 B. C. according to researches made in recent times. Coming down to the 7th century B. C., when the Grammarian Panini lived, we find that such images of Gods existed. According to him by the addition of certain suffix, he draws a distinction between images that were sold, and those which were not sold, but these latter were used by the Brahmans for the purpose of making a living by exhibiting them from door to door and these were supposed by him to be divine images. Besides the anthropomorphic representation of the Hindu Goddess of Wealth appearing in some of the early works in Budha's lifetime, shows according to Dr. Grundewell an undoubtedly ancient and indigenous origin. But nowhere up to this time it appears, the idea of worshipping these images as Gods with their ears opened to the prayers of the faithful is found mentioned till we come to the time of the death of Budha, which is supposed to have taken place in the year 487 B.C. and to the composition of the Mahabharata placed from about 400 B.C. The idea that such images of the Gods and the minor divinities seems to have crept in, when the higher practice of Yoga ceased and the doctrine of Bhakti had become more gradually accepted by the people. It is now historically settled that immediately after Budha's death, images of his likeness were made in scores and were worshipped by his followers, and more specially in those parts of the Mahabharata, which were composed at this time, we find distinct mention of these images being worshipped as divinities, and were considered as ever willing to lend their ears

to the prayers of the faithful and guard them against approaching calamities by giving ominous portents.

### VISHNU.

The worship of Vishnu dates from the time of the Rig Veda, and though a few hymns are addressed to him, he is by no means unimportant. He was the first among the Adityas-Solar impersonations, and as such according to the ideas of the time, he represented the Sun in its daily and yearly course. In his anthropomorphic form, he was represented as a young man, attaining huge proportions, taking the three strides by which he encompassed the whole world. In this, may be found the germ of the story of the Vaman incarnation of the Puranas. He is also called the germ of the sacrifice in one Rig-vedic passage and also figures as a leader in battle very often helping Indra in his encounters. From this position in the Vedas, he began to rise in importance in the time of Brahmana and Aryannakas and in the Upanishads, he was elevated to the position of a Supreme Being. Compare (Maitryana Upanishad and the Katha Upanishad) where we find the Self-identified with Vishnu and Narayen. Though looked upon as such he was far from being recognised as the supreme God, an idea which was developed later in the Epic and the Puranic age, where the sectarian name Vaishnava is attached to his worshippers, who worship him exclusively. Once elevated to the supreme rank, he became more and more estranged from his ancient solar character though retaining the elements of the heliolithic cult and he is now represented as sitting enthroned in Vaikuntha with his consort Lakshmi or Sri the Goddess of Beauty, Pleasure, Victory and Prosperity. Retiring gradually to a distance he assumes the functions which formerly belonged to Brahma. His identification with Narayen, who appeared in the beginning of things floating above the prime order waters as suggested in the Taittarya Aryannaka was now made complete. According to as he sits or sinks into mystic slumber he gives birth to creation or draws it back again into himself. But it is not so much by himself that he interposes in the affairs of the world and receives the homage of men, as by means of his incarnations or Avtars which are explained as "the presence of once mystic and real of the supreme being in a human individual, who is both truly God and Man, and this intimate union of the two

natures is conceived of as surviving the death of the individual in whom it was realised." The number of these incarnations is variously stated, but at present, ten is the number which is accepted. Of these, the Varaha, Narshiva, and Vaman as Trivikram are worshipped by a few worshippers; whereas his incarnations as Rama and Krisna claim by far the largest number of votaries. Buddha who became later on reckoned as an Avtar when Budhism merged into Hinduism had a large following for a time, but now his votaries are not so numerous in India.

MATSYA AVTAR.—Before the end of the last Kalpa, when the Universe was overwhelmed with a Deluge, Manu performed with much devotion severe tapas. One day while offering his oblations, a small fish appeared in the water in his folded hand, which as he was about to throw, spoke to him in the following words: "Throw me not, as I am afraid of the large fish." Manu accordingly took it home and kept it in a jar; when this fish grew in size and asked for more room, Manu next placed it in a pond; when it again increased and asked for more room, it was then thrown into a lake, and at length into the sea, where it at once assumed an enormous size. Manu then addressed the fish, "Why hast thou, Oh Lord, thus deluded me." To which the fish replied, "On the seventh day, there will be the greatest deluge; do thou therefore take all kinds of seeds and with the seven Rishes, enter into a boat; and during the deluge, fasten it to a horn, which you will see coming out of my head." When the deluge came at its appointed time, when the Creator had gone to sleep and the Vedas had been purloined by the Asura Hayagriva, Manu did, as he was ordered and was thus saved. Hayagriva was afterwards slain by Vishnu. This Avtar, according to Bhagavat Puran, was meant to recover the lost Vedas from the ocean.

The image of Matsya may be made either in the likeness of an ordinary fish or in the form, which is half fish and half man, and is generally given four hands, two of which carry Vishnu's weapons—the Sankha and Chakra, and the other two being held in different poses.

KURMA AVTAR.—This, the second Avtar, was assumed by Vishnu to help the Gods against the demons by procuring Amrit; "Ambrosia for the Gods" which lay at the bottom of the Sea



of Milk. Here Vishnu assumed the form of a tortoise for supporting on its back the mountain "Meru" employed in churning the ocean, when fourteen articles of inestimable value emerged from the depths of the ocean. Out of these fourteen, was the much coveted Amrit, which was given to the Gods and they attained immortality.

The image of this Avtar is generally worked out in the form, which is half man and half tortoise, the lower part being that of the tortoise. The image has also four hands, two of which carry the Sankha and Chakra and the other two are given particular poses.

VARAHA AVTAR.—The earliest reference to the earth having been lifted up from the depth of the lower regions by a boar is found in Satapatha Brahman. Also reference is to be found in the different Puranas, the Ramayana, the Vishnu, the Linga and the Agni, the last of which informs us, that a chief of the Asuras Hirannyaksha seized the earth and carried it down into the depth of the ocean. Vishnu assumed the form of a boar, slew the demon and raised up the Earth.

The man-boar image of Vishnu should have in its hands Gada and Padma and the Goddess Bhumidevi (Earth) should be shown as seated upon his left elbow. One of its feet should rest upon the Serpent Adishesha.

NARSHIVA AVTAR.—The Asura Hirannyakasyapu had in his former life adored Brahma and obtained boons that he should be so invulnerable as not be killed by man or beast, that he should not die either in the day or at night and that no weapon of any kind should injure him. In consequence, he became so haughty and irrepressible in his warring behaviour towards the Gods, that it became imperative that he should be killed. They approached Vishnu and he undertook to do it at the same time taking care to respect the boons conferred by Brahma. He, therefore, assumed the form of a man-lion, and emerging from the pillar which Hirannyakasyapu angrily kicked, when disputing with his son Prahlad—an ardent devotee of the God Vishnu—on the God's omnipresence, tore Hirannyakasyapu with the claws at the time of lingering twilight forming the junction of day and night. Himself being seated upon the doorsill of Hirannyakasyapu's mansion.

The image of Narshiva as emerging from the pillar is shown as a seated image with four hands. In the two back



hands, there are the Shankha and Chakra, and the two front, shown as seizing the demon and destroying him.

This divinity is worshipped all over India, but traces of his worship are far more abundant in the south than in the north, and he is still the family divinity of many families in the south. Krsna-Deva Raya of the Vijianagar Kingdom caused a huge statue of the God to be constructed near the Krsna temple constructed by him.

VAMAN AVTAR.—Bali, grandson of Prahlad, the great devotee of Vishnu in the man-lion incarnation, was able to overcome the Gods by means of his strength, he had acquired through his religious penances. Indra was driven out of his kingdom, which pained his mother Aditi, who implored Vishnu to restore the lost Kingdom. Vishnu promised and assuming the form of a young boy, proceeded to the place where Bali was conducting a sacrifice, and begged of him for some land as a gift. Bali seeing the young boy dressed as a Brahmachari arrive there, duly honoured him and asked him to say what he wanted. Sukra Acharya, the Guru of the Asuras, who happened to be there at this time, recognised that the young man was no other than the God Vishnu Himself, warned Bali to be careful in making his promise. Bali, noble and generous hearted as he was, said that if the God in whose honour he was performing the sacrifice, came to be there, what greater honour could there be to him, than to give him anything he asked. The boy then asked for only three paces of space which was promised and the gift was confirmed by the usual ceremony of pouring out the water. Immediately Vamana assumed huge proportions, and with one stride, he measured the whole earth (Bhu-loka) with the second, the mid-world (between the Heaven and the Earth) and when the space for the last stride was demanded, Bali offered his royal head. Pleased at the devotion, the God, called Trivikrama (the God of three strides), sent him with his third stride to Patala—the nether world of the Asuras—there to be the sovereign of the Asuras. The world was thus freed, and Indra's Kingdom was restored to him.

It appears that this Avtar is more worshipped in the Idol of Trivikrama, showing the God taking the three strides and

not in the form of a young Brahmachari. The worship of this God flourished more in the time of the Vijianagar Kings.

**PARASHURAM AVTAR.**—According to Agni Purana, Vishnu observing that the Earth had been oppressed by the Kshatrias, assumed a mortal form in order to protect the Gods, the Brahmins and the mankind, and was born as the son of Renuka and the sage Jamadagni of the race of Bhrigu. Kartavirya, a King had obtained through the favour of Dattatraya (one of the incarnation of Vishnu) a boon that he excelled in valour and every war-like quality. One day, while hunting, he was invited by the sage Jamadagni to refresh himself, and he with his attendants was sumptuously entertained by the sage through the agency of a cow called Kam-dhenu, which was reputed to possess the supernatural powers of granting all the desires of its possession. The King, noticing the wonderful powers possessed by the cow, requested the sage to give her to him and on his refusal, he was killed by the King's son. Parashuram who was at this time in the forest, on his arrival home, found his father slain, and on this account vowed his revenge to deliver the earth from twenty-one generations of Kshatrias. Parashuram is the favourite deity of the Chitpavan Brahmins.

**RAMA AVTAR.**—Rama, the ideal hero of the Hindus in every respect and the husband of Sita, the perfect model of Hindu womanhood, was born of Dasaratha of the Race of Raghu. The whole story of Rama from his birth to his ascent to Heaven is given in the famous Epic poem of Valmiki, known as Ramayana. The first six books of this Epic, narrate the story of Rama's banishment to the forest, of Ravan's (King of Lanka) carrying away by stealth Sita, of the consequent alliance of Rama with Sugriva, the chief of the Monkey-tribe and with his aid learning through Hanuman, the monkey-messenger of the whereabouts of Sita and her lonely sufferings, of Rama's then making preparations to go over to Lanka for her relief, of the fight in Lanka between Rama and Ravan, of Ravan's final destruction with all his hosts, and finally of Rama's return to Ayodhya, the Capital of his Kingdom, and his installation on the throne of his deceased father. The last book of the Epic deals with the later history of his life till the passing away of Sita into the bosom of her

Mother Earth and Rama's ascent to Heaven. That Rama was considered as an Avtar or Incarnation of Vishnu, from very early time, can be seen by a reference to Raghuvansa, one of Kalidasa's work, who flourished about the fifth century of the Christian Era, when the Gupta power was at its height, and also from a reference to the Vayu Puran, which is the earliest work of its class. But there was no distinct cult in his honour till a later date. Madhava is represented to have brought the Image of Rama from Badrikashrama about the year 1264 A.D., which shows that in all probability, the cult of Rama seems to have come into existence about the eleventh century, and was introduced in the South about this time and extended widely as can be seen from the fact that in the year 1513, Krishna Deva Raya, the greatest of the Vijianagar Kings, built temples in honour of Rama and Vithoba. Later on Ramanand and Kabir who promulgated and furthered the teachings of Ramanuja in the North, gave a new impetus to Vaishnavism by introducing more prominently the name of Rama, and the cult henceforth appears to have gained more and more in strength.

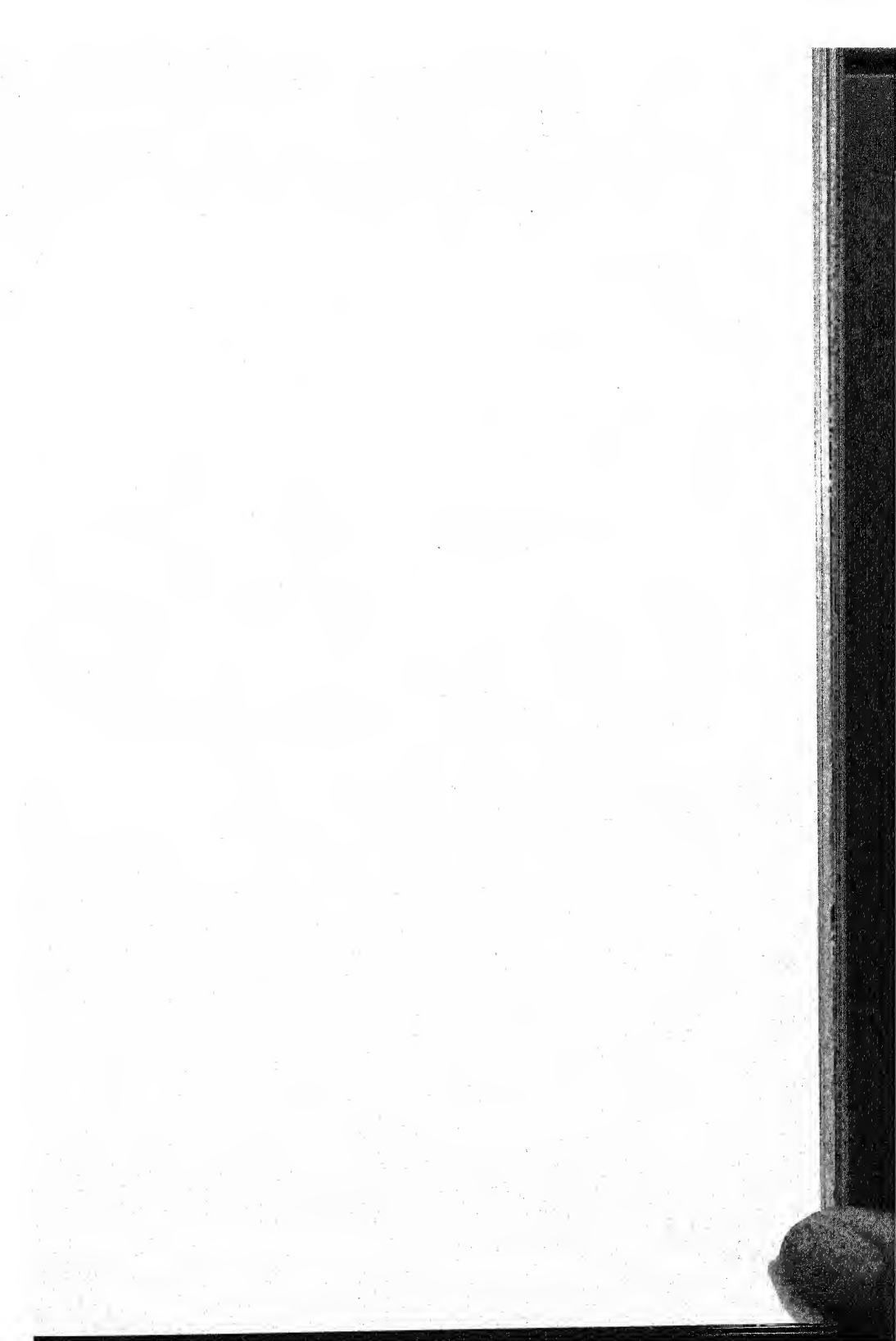
**BALARAM AND KRISHNA AVTARS.**—Both were the sons of Vasudev and Devaki and both had to be secreted and saved from the tyrant Kansa, king of Mathura. They belonged to the family of the Yadavas, and the following account is taken from Agni Puran, though for a very detailed account of Krishna's life we have to go to Hari-Vansa, the 10th Skandh of Bhagwata, to the Vishnu Puran and the Mahabharata. "In order to relieve the earth oppressed by wickedness, Hari was conceived as the seventh son of Devaki, and was known as Balaram. Afterwards Hari was born as the eighth son of Devaki, and became celebrated under the name of Krishna. Kansa, who was bent upon the destruction of all of Devaki's children, in consequence of a prophecy made to him that he would be slain by one of Devaki's sons, confined Vasudev and Devaki; but when this child was born, Vasudev fearing Kansa's vengeance, removed it secretly immediately after its birth to the Nanda's House, whose wife Yeshoda had just then given birth to a daughter. There he placed Krishna by the side of Yeshoda and took away her daughter with him. Kansa, being informed of the birth of the child, hastened to Devaki's chamber and taking the child, was about to dash it against a stone when it suddenly escaped from

his grasp, sprang high up and said, "He who is to slay thee, is already born." Kansa then took means to slay all the children in the city and delighted like Herod in the news being brought to him. He had a special eye on Devaki's children at Nanda's place, but his efforts proved unsuccessful. Thus Balaram and Krishna grew together and became closely associated with the cow-herds and milk-maids living in Gokula. While in Gokula, various stories are narrated regarding the wonderful exploits of his childhood, and then of his stay at Mathura at the invitation of Kansa, when he slew him. He then removed to Dwarka, and established a kingdom of his own. Here he heard the news that the Pandavas, who were related to him, were sorely pressed by the Kauravas, when he proceeded to Hastinapur, and did his level best to effect conciliation but finally when war was declared, he enlisted his sympathies on the side of the Pandavas. He appears to have taken a subordinate part in the war acting as a charioteer (Parthsarathi) of Arjuna but the priceless teaching on the due performance of one's own duties according to Dharma and its reward here and hereafter which he gave to his bosom friend Arjuna raised him up as the founder of a Monotheistic religion known as Bhagavatism. After the great battle, he removed to Dwarka with all the Yadava race, which was finally destroyed by mutual slaughter. He then forsook his earthly career.

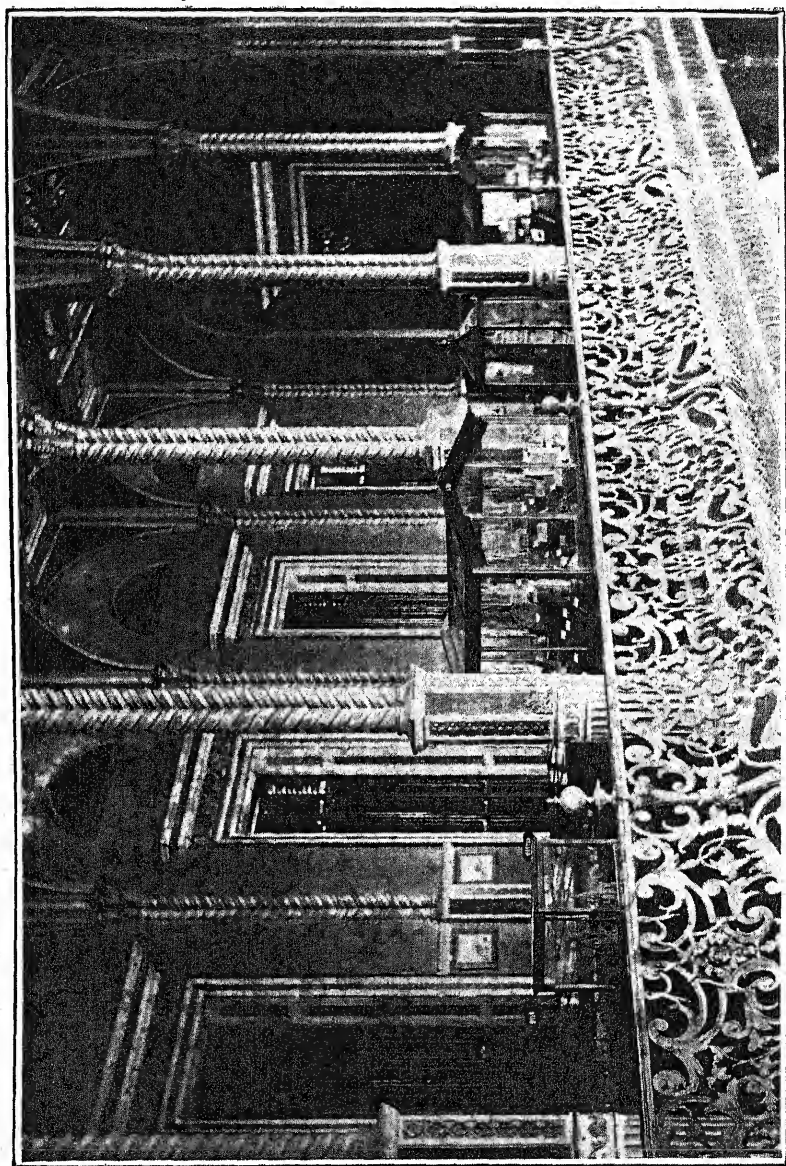
As a King, a statesman, a warrior and a hero, a friend and supporter, a guide and philosopher, and a teacher and a religious reformer, particularly as an expounder of all comprehensively Monotheistic religion of love and devotion to God conceived as Vasudeva, his achievements have been so great and glorious that among the incarnations of Vishnu, none receives more cordial and more wide-spread worship than Sri Krishna. Balaram is hardly worshipped independently as a God, the glory of his younger brother having thrown him into a shade.

The principal ways in which the image of Sri Krishna is worshipped are :—

- (i) Navanita Nritya Murti—representing Krishna as a child dancing with joy for having secured a ball of butter.
- (ii) Gan-Gopal or Venu-Gopal—where he is conceived as







Collections in the Western Gallery in the year 1910.



delighting with his charming music the hearts of the cow-herds.

- (iii) Kaliya Mardana Krishna,—representing him as chastising the serpent Kaliya in the form of a child dancing upon the head of the Cobra.
- (iv) Goverdhandhari Krishna,—representing him as holding up the Goverdhan Mountains.

Besides the above, there are a number of images of Krishna as a child, crawling on all the fours with a ball of butter in his hands, as a youth, expressive of Bhakti and Love ; as a child, lying upon a Vata leave, symbolical of God brooding over the Ocean of chaos caused after the destruction of the Universe.

Magasthenes, who was ambassador at the court of Chandragupta, the Maurya (reigned in the last quarter of the fourth century B.C.) alludes to the Vasudev Krishna worship prevalent at the time among Surasenas, a tribe of Kshatrias who dwelt round about Mathura. It follows therefore that if the worship of Vasudev Krishna prevailed in the time of the first Mauryas, it must have originated long before the establishment of the Maurya Dynasty, and Dr. Bhandarker suggests that its origin can be traced to the stream of thought which began with the Upanishads and continued onwards.

**BUDDHA.**—The life of Gautama Buddha is too well known to need recapitulation. Opinion was, it seems, divided on the point whether Buddha should be considered as an Avtar of Vishnu or not. But there is evidence to show that towards the end of Kanishka's reign about 150 A.D., the sage Gautama became, according to the tenets of the Mahayana School, to be regarded as God, with his ears open to the faithful, and served by a hierarchy of Bodhisatvas and other beings acting as mediators between him and men. This being the case, the Bhagvat Puran which was edited during the Gupta period, claims him as one of the Avtars, and the Hinduism of the latest age subsequently finds no difficulty in making this compromise with the Buddhist.

**KALKY AVTAR.**—This incarnation is yet to take place, and is predicted to come off at the end of the present Kali Yuga to re-establish righteousness on earth.

**VITHAL AND RUKMINI.**—The popular Vaishnavism of the Maratha country centres round the shrine of Vithoba at Pan-

dharpur, situated on the banks of Bhima. According to the legend the place round Pandharpur was a forest of the name of Dindiravana. There lived a man by the name of Pundalika, who spent all his time in the service of his aged parents, and the God Krishna was pleased with his devotion to them. In the meantime Krishna, who was at Dwarka, remembered Radha, who loved him intensely while in Gokula. At this Rukmini, who came to know of this, got offended, left Dwarka and wandered about until she came to the forest of Dindiravana, and rested there. Krishna, filled with sorrow at this disappearance of Rukmini, went in quest of her until he came to the place where Rukmini was lying. She was reconciled to Krishna, who then went to the hut of Pundalika to reward him for his devotion to his parents by personal manifestation. Pundalika, being then engaged in attending to the wants of his parents, was not able to greet him at once and threw a brick and asked him to stand on it and wait till he had finished what he was engaged upon. Krishna stood on the brick and there he was joined by Rukmini and thus the shrine of Pandharpur grew up.

According to Dr. Bhandarker, it is unknown when the Temple was originally built, but there is evidence to prove from copper plates and stone inscriptions that it existed in the middle of the 13th century.

### CIVA.

In the dreadful and destructive phenomena of nature, and the epidemics that rage and carry away hundreds of men, the ancient Aryans saw the power of the Omnipotent and they named it Rudra. The same power, when appealed and appeased by prayers and offerings, was turned into a benignant being and they named it Civa, the Auspicious. This was the natural process by which a belief in Rudra-Civa came to be established in India in early times. In the Rig Veda, Civa appears as an epithet of Rudra and the hymns addressed are sung more in honour of Rudra than that of Civa. Herein he is described as a malevolent deity and prayers are offered to appease his wrath. In the Yajur Veda (see Sataraudrya) the character of Civa becomes more developed. His benevolent nature is distinguished from the opposite, but possessing as he did the characteristics of Rudra he was supposed to dwell from the habitation of men.

far away in forests and came to be considered as the Lord of the forest dwellers. In the Atharvan Veda the conception is still further developed where from the terrible and destructive God, he was transformed into a benevolent deity. It was reserved later on to the Svetasvatara Upanishad to disentangle from their connection with the Impersonal Brahm those elevated notions about the nature of the God, and his relation to man and the world, and to transfer them to this God, who was then alone in the field, and the germs of Bhakti or Love were dedicated to him. Hence he came to be recognised as the Supreme God. This nomenclature of the God came down from the time of the Vedas to the time when the Mahabharat was composed, when the characteristics of Civa or Mahadev as he then came to be called in direct and conscious imitation of New Vaishnavism, were that he was a powerful, wrathful and impetuous God, but could be easily appeased and was bountiful when propitiated. In this character he is represented as sitting enthroned in his heaven called Kailas with his consort Parvati with a host of Ganas as his attendants.

The Puranas mention the following different personalities of Civa :—

- (1) As a Creator when he is worshipped in the form of a Linga.
- (2) As a Destroyer, and the Terrific.
- (3) As a Yogi.
- (4) As Mahadev.
- (5) As Natesh.

### GANPATI OR GANESHA.

Ganapati is supposed to be the son of Siva and Parvati, and as his name signifies, he was placed in command of the Ganas by his father Siva. He is also called Vinayaka from his being identified with the Vinayakas, reckoned among the Gods, who are said to observe the actions of men and remove all evils. Another name under which he is worshipped is Vigneshwara from the account given that Siva created him to hinder wicked people from performing sacrifices and other virtuous acts and to render assistance to good men in their endeavour to perform such acts. From these different names given to him the main

purpose of his creation was that he should create difficulties first in the ways of wicked persons and then, when appeased by prayers, to remove them (in this case he is called Vighnaharta). He is generally represented in human form with four hands, but with the head of an elephant, supposed to have been placed by Siva himself in place of the natural head, which had been lost according to some Puranas by the evil aspect of the Saturn when he was a child, and according to others, by the offending hand of Siva himself. He is the Indian God of wisdom and therefore all compositions either in verse or prose and all affairs of moment are begun with an invocation to him. He is largely worshipped in India, even a small village has its own image of Ganapati with or without a temple to house it in. At the entrance of villages and forts, below Pipal trees, and almost at the entrance of every Vishnu or Siva temples, the figure of Vighneshwara is invariably to be seen. In the Maratha country, his image made of clay is annually worshipped with great pomp, whereas at Chinchwad near Poona, there is a shrine where worship is exclusively dedicated to this God.

The worship of Ganapati appears to have been introduced between the end of the 5th and the 8th century A.D., for the image of Ganapati appears first in two of the caves at Ellora.

### SKANDA.

Skanda known as Karttikya or Shadananda in the Maratha country and Subramanya in the Madras Presidency, where his worship is very popular is supposed to be the son of Siva and Parvati, though different accounts of his origin are given in the Epics and Puranas. He was the leader of Siva's Ganas. Skanda was worshipped in the time of Patanjali, for he mentions that images of Siva, Skanda, as being worshipped in his time. Besides we find his images struck on the coins of ancient India and so far back as 414 A.D., mention is made of a Gallery built in his honour in the temple of Swami Mahasena. Hemadri mentions several observances and vows observed in his honour, in his book the Vratkanda.

### INDRA.

Indra was the favourite national God of the Vedic people. He is more anthropomorphic on his physical side and

invested with mythological imagery. He is primarily a God of the Thunderstorms who vanquishes the demon of drought and darkness, thus setting free the waters and winning light. He is secondarily a God of battle, aiding the early Aryans in overcoming the aboriginal foes. He is described as being of a ruddy or golden colour and as having arms of enormous length, but his "forms are endless." He rode in a bright golden car drawn by two tawny horses. His weapon is the thunderbolt, which he carried in his right hand, and he also used arrows, hook and a net to entangle his foes. He was more addicted to Soma juice than any of the other gods. This beverage stimulated him to carry out his war-like deeds, for at the time when he vanquished Vrata, he is said to have drunk "three lakes of the Soma juice." As a God of the Atmosphere, he rules over the weather, and dispenses rain, he sends forth lightning and thunder and is continually at War with Vrata, the demon of drought and inclement weather. In this fight the Maruts are his regular allies. Indra is more praised as the Protector, Helper and Friend of the worshippers.

In later mythology Indra lost his former position and was only content to become the regent of the atmosphere, and to have his own Swarga, the habitation of Gods and beautified spirits. He is represented as a fair man, riding on a white elephant, and bearing the Vajra or the Thunderbolt in his right hand. He is not now the direct object of worship, but receives incidental adoration.

### **BRAHMA, KAMA (KAMA-DEVA) AND KUBER (GOD OF WEALTH.)**

The name of Brahma as also of Kuber and Kama appear first in the Sutras which were composed at a time, when the theory of transmigration of the soul and the enjoyment of the fruits of Karma had been all round accepted by the people of India, soon after the period of the Rig Veda. These again find mention in the work of Valmiki, the author of the Ramayana, composed as a popular poem before the 4th century B.C. and also in Mahabharat, where these appear as divinities, with Indra as the chief. In the second stage of the Epics, when the movement towards theism became stronger and the claims of both Rama and Krishna to



supreme God-head as being identified with Vishnu grew stronger, these Gods began to be lowered in popular estimation.

### **BRAHMA.**

According to some authorities (Sathpatha Brahmana and Manu) Brahma sprung from the mundane egg deposited by the Supreme First Cause and is the Prajapati or Lord or Father of all Creatures. According to Ramayana he arose spontaneously out of all water, which existed before creation. Thus he came to be regarded in the Puranas and other subsequent writings as the creator of the world and continued to receive adoration. He is described in the Puranas as a being of red colour, having four heads, four arms, in each of which he holds the sceptre, string of beads, waterjug and a book of the Vedas. In the Padma Puran he is identified with the Eternal Brahma of the Upanishads, and we find a Brahma sect appearing in the literature of the Hindus. Later on when sects developed and when Vaishnavism and Civism became the two recognised creeds, each of the Gods being identified with the Eternal Brahma, the worship of Brahma as a Creator fell out of favour and his worship in consequence gradually ceased among the people. The only place where a Temple stands erected in his honour is at Pushkar—a lake in Rajputana. He is now worshipped jointly with Vishnu and Civa as a member of the Trimurti, but never separately probably from the time, when the Panchayatana puja was started by the Smarthas.

### **KAMA OR KAMA DEVA.**

According to Rig Veda Desire is said to have been the first movement which arose in the One, when he thought of creation. This desire, not of sexual enjoyment but of good in general was in the Atharvan Veda elevated to the position of Supreme Godhead. There are different accounts given of the birth of Desire, now identified with Kama in the literature previous to the Puranas which however have invested him with the office of exciting passion of Love in the hearts of men, as such he is the Lord of the Apsaras or Heavenly nymphs. He is armed with a bow and arrows, each arrow being tipped with a distinct flower. He is represented as a handsome youth riding on a Parrot and



accompanied by the nymphs. In the middle ages the God of Love was worshipped by girls of marriageable age in that particular season of the year when Vasanta decked the earth with a profusion of sweet scented and smiling flowers. The amorous scenes of the old dramatists in India are generally laid at this time of the year when we read of Royal princesses going to the temple of Kama to pray for his intervention to secure the attainment of the object of their heart.

### KUVERA.

Kuvera was the god of wealth and he is very often referred to in the Ramayana, but there is no indication of his having been accepted for general worship, his place being taken by Sri or Lakshmi, consort of Vishnu.

### SURYA OR THE SUN-GOD.

The adoration of the Sun dates from the earliest times. Some ten hymns are addressed to Surya in the Rig Veda. He is described as far-seeing, all-seeing, and beholding all the good and bad actions of men. He was reckoned among the Adityas, son of Adi and Heaven. In some passages he is identified with some members of the animate world, whereas in others, he is described as an inanimate object being called the "Gem of the Sky." Sometimes he is called the Chakra or the wheel of the Ratha in which he is daily drawn round his course, which we have already seen, later on came to be regarded as one of the weapons in the hands of Vishnu, who in the earlier stages of his worship was identified with Surya. He measures days and prolongs life, dispels sickness, disease and all creatures depend upon him for life.

The Puranas give a different account of the origin of his birth, and describe him as dark-red with three eyes and four arms. He holds red lotuses in two hands, with the third he is bestowing blessings and with the fourth he encourages his worshippers. He sits upon a red lotus and is drawn in his chariot by seven horses or with one horse having seven heads.

### SOMA.

Chandra mystically identified with the Soma plant of the Vedas from which the Soma juice was extracted in a few of the latest hymns of the Rig Veda, almost identified in the Athar-

van Veda, and completely identified in a commonplace manner in the Brahmanas, is according to Puranic mythology a luminary, who is Lord of the Vegetable kingdom. He is now more worshipped on account of the powerful influence he is supposed to exercise over men as a planet. His abode are the twenty-seven lunar asterisms, and his influence is good and evil according as he is in good or bad asterism.

### YAMA.

In the Vedas, Yama is not expressly designated as God, but only a being who ruled over the dead. He dwells in the remote recesses of the sky. He is then said to be the first of men that died and to have found out the way to the home "which cannot be taken away." He has two four-eyed dogs, who act as his messengers. These guard the path along which the dead man proceeds to join his fathers. They watch mankind and wander about as messengers. In the Vedas he is nowhere represented as having anything to do with the office of punishing the wicked, but he is only an object of terror. In the Epics, he is raised to the position of the God of the Departed and invested with the office of judging them. In his work of judging mankind, he is assisted by his Recorder Chitrugupta, who reads an account of the life of the dead man, and a just sentence follows. According to the Epics and the Puranas, Yama is the regent of the southern quarters. He is represented as of green colour, and clothed in red. He rides upon a buffalo and is armed with a ponderous mace and a noose to secure his victims.

### AGNI OR THE FIRE-GOD.

As the personification of one of the powers of Nature, the sacrificial Fire, Agni, was second in importance to Indra with the Vedic people. The anthropomorphism of his physical appearance is only rudimentary, and he is described as flame-haired, having sharp jaws and golden teeth. He is supposed to be the child of Heaven, when he is identified with the Sun or Lightning and is often called "the Child of Heaven and Earth." On Earth, he is mentioned as the offspring of "Arani," produced by the friction of two kindling sticks of the Shami tree. For his food he is offered wood or clarified butter, and

he was fed thrice a day. He was supposed to carry offerings of men to the Gods, and was also the messenger between them and men. On Earth, he is more associated with men and he is called Graha-pati (Lord of the House). As the centre of sacrifice, because at every sacrifice his presence is necessary in virtue of his office as a carrier of offerings to God, he is often called the domestic priest (Hotr) or the officiating priest (Adharva) or the praying priest (Brahman).

Agni in his character as a sacrificial Fire conveying offerings of men to Gods, should be distinguished from Agni in his character as a corpse-devouring Fire, where he is called Kruvyad, and is described as possessing a hedious form.

In the process of mythological personification, Agni in the Puranas is described as a red man, having two faces, three legs and seven arms. He rides on a ram and from each mouth a forked tongue or flame is seen to issue.

The adoration of Agni dates from ancient times. In the time of the Rig Veda, he was worshipped as God of the lower regions, as through him, the offerings of the men consisting of the Soma juice, milk, butter and corn reached the gods. In the time of Yajur Veda and the Brahmanas when sacrifices were freely offered, Agni was invoked and worshipped in the Yanyas, which were performed from time to time by great kings and princes and which lasted for a considerable number of days, in some cases, say almost for a year. We read of the heroes of the Ramayana and the Mahabharata performing daily this Fire-worship with strict regularity. Later on in the time when the Brahmanic ritual was at its height, the importance of Agni increased and the conception of a divine triad of Agni, Surya, and Vayu as summing up the divine energy asserted itself. According to Manu, it became obligatory to every householder to kindle at least the three sacred fires or Istis as they were called; and in the Puranic age, a special sect of devotees arose, who, from the nature of their worship, came to be called "Agnihotris."

### HANUMAN.

Hanuman is a deity of the Puranas, wherein he is stated to be the son of Anjini and Vayu—the Wind-God of the Vedas—with whom he is later on identified. He derives his popularity

from the part he undertook in assisting Rama to recover his wife Sita. He is represented as possessed of miraculous powers and as a benevolent God. He is supposed to have all the Bhutas and other evil spirits under his control. He is also supposed to guard the villages. The image of Hanuman is made in two ways, representing him as either (1) Vira Hanuman or (2) Das Hanuman.

### JALASAYIN.

This aspect of Vishnu is the one conceived to have assumed by him at the end of the Mahapralaya or the great deluge. Here Vishnu is shown lying in the midst of waters resting on the Adishesha or Serpent Couch. Three-fourths of the body is made to lie flat on it and the remaining fourth is slightly lifted up and inclined. One leg of the image rests on the lap of Lakshmi.

On the lotus sprung from the navel, is seated Brahma, the creating God. This conception of God brooding upon the waters of chaos at the time of Universal dissolution, has a cosmic character and was developed in the time of the later Brahmanas and Aranyakas, and this the original conception of his connection with the primeval waters was kept up in the Mahabharata and Purans, where Vishnu under the name of Narayana identified with Vasudeva figures as the Supreme God. This conception, when compared with the conception of Vatapatra Sayin—the infant God (See Krishna on the Vata leaf) floating on a banyan leaf assures as it were, that the dissolution of the Cosmos is in fact the infancy of the evolution.

### LAKSHMI, SARASWATI, PARVATI.

Mr. A. Grundewel writing about the Buddhist sculptures states it to be his opinion that the image of one divinity only appears to have always been produced with a certain evident pleasure. It is the ideal of Indian woman—the Goddess of Beauty, Prosperity, of Domestic blessings and of Wealth. The worship of those popular Goddess must have prevailed long before the Buddhist times throughout the whole of India. This opinion seems to be confirmatory of the view, that according to the Brahmanas, the Upanishads, and the subsequent philosophical schools, the first great cause divided itself into two becoming half male, half female representing the Shakti or Energy, which

in the case of Vishnu came to be associated with him under the name of Sri or Lakshmi, in the case of Civa came to be associated with him under the name of Parvati or Uma or Umba in her milder aspect ; and under the name of Durga, Kali, Chamundi, Chandi, Bhairavi or Vindhyavasini in her wilder character ; in the case of Brahma came to be associated with him under the name of Saraswati. In the later Puranic age however this first energy, which was invested with a personality, came to be regarded as consorts of the respective divinities with whom she first came to be associated.

LAKSHMI.—In the Rig Veda the word appears in the sense of good fortune. According to the Puranas and in the account given of her in the Ramayana, she is stated to have sprung from the sea in full beauty with a lotus in her hand. As "Sri," she has long been worshipped, but it was reserved for the later Gupta kings to enthrone her on the high pedestal of worship and offer her honours equally and conjointly with Vishnu. (See model of Lakshmi Narayen).

SARASWATI.—In the Mahabharat we find Saraswati first mentioned as a River Goddess in the time of the Rig Veda, later on identified with Vach (speech), and in the great poem addressed and invoked as Goddess of Learning, Inventress of the Sanskrit language and of Devanagri characters. In the Puranas she was associated with Brahma as his consort.

PARVATI.—Derives her name from "Parvat" being according to the Puranas the daughter of Himavat. In the Mahabharat she finds mention as Durga and addressed as slayer of Mahisha and is described as Vindhyavasini dwelling on the Vindhya Hills and delighting in the offerings of flesh and wine. In this her fierce character she is also called Chamundi, Kali Chandi, Bhairavi, etc. She is much invoked by the Tantrics. As consort of Civa, in her milder aspect she is known as Gauri, Amba, Uma, etc., when she is worshipped according to Vedic and Puranic rites without any offensive offerings

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CASE No. 7 A.

Model of Dattatraya standing under a Fig-tree (*Ficus religiosa*).



## DATTATRAYA.

According to the Vayu and Bhagwata Puranas, Dattatraya is reckoned as one of the Avatars of Vishnu, the three Gods—Brahma, Vishnu, and Siva combining themselves into one form. As such he is considered as the son of the Sage Atri and his wife Anusuya known for her virtuous and pious life. He became a great Yogee and is worshipped to this day. In the Maratha country, the important shrines being at Gangapur in the Nizam's Dominions and Narsobachi Wadi on the Southern Maratha Railway and at Chaul near Alibag.

His image is found made in the likeness of Vishnu in the Yoga posture, the triple nature of the divinity being indicated by the characteristic emblems the Swan (vehicle of Brahma), the Garuda (Vishnu's vehicle) and the Bull (vehicle of Siva) being carved on the pedestal. But now the popular way in which the image is made, is the form of a human-being with three heads and six hands and generally attended by dogs, emblematic of the four Vedas.

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## THE COCOANUT PALM.

The Coconut Palm is one of the most beautiful of Indian trees, growing as it does to a height of nearly 100 feet, with a graceful and slender trunk which terminates in a crown of branching leaves. The leaves attain a length of nearly 20 feet, each leaf consisting of a strong mid-rib, whence spring a number of thinner leaflets. The flowers are arranged in branching spikes, enclosed in a tough spathe, and the fruit matures in bunches of ten to twenty. The fruit when ripe is oblong and triangular in cross section, and consists of a thick external husk within which is the nut. The nut has a very hard woody shell enclosing the kernel, within which is a milky liquid.

The palm flourishes and attains great luxuriance and vigour near the sea shore along the greater portion of the sea coast of Western India from Cape Camorin to Kathiawar. The Coconut palm furnishes many valuable and important commercial products and is therefore the subject of careful cultivation. The



kernels of the nuts supply food and the milk contained within it, a pleasant and refreshing drink. The juice extracted by tapping the unexpanded flower spathe forms "toddy," which may be boiled down to "Jaggery," or allowed to ferment. When distilled it is called "Arrak." The trunk yields a timber called "porcupine wood," which is used for rafters, and ridge poles, house posts and for other building purposes, for spear handles, walking sticks and for fancy work. The leaves are platted into cadjan fans and baskets, and are also used for thatching the roofs of houses. The shells of the nut are used as water vessels or are turned into ladles, spoons, beads, etc., and the external husk yields coir fibre, from which matting of various descriptions is made. Oil is extracted from the nuts either by boiling or pressing the kernels in mill worked by oxen. For this purpose kernels are broken into small pieces and dried in the sun, when it is known as "Copra." The oil is nearly as white and limpid as water and is used in India in cooking and lighting, soap-making and anointing the body.

Preparation of the coir fibre :—In India the fibre is removed from the shell by forcing the nut upon a pointed implement stuck into the ground, a primitive method as compared with that adopted in England, where finely pointed chisels are used for the purpose. The fibrous husks are then soaked in water either salt or fresh for a period from six to eighteen months, great attention being paid to this part of the work as a shorter or a longer period is likely to affect the quality of the fibre produced. When fresh water is used the soaking is done in tanks of brick or stone, but when salt water is employed the fibre is placed in shallow "pans" of sand on the banks of estuaries, or inlets of the sea. When completely soaked the husk is beaten with heavy wooden mallets and the fibre separated by the hand. Ropes, door-mats, brushes, cordage, coir-matting and other articles of domestic utility are manufactured from this fibre.

In India the fruit of the Cocoanut Palm is employed largely by the Hindus in religious and marriage ceremonies. The offering of a cocoanut to his God is the first requisite for a Hindu before the commencement of any ceremony. In cases of sickness, in time of troubles, etc., this offering is usually made.

# **SPECIMENS OF ARTICLES MADE OF THE PRODUCT OF THE COCOANUT TREE.**

## **CASE NO. 8.**

### **(a) Specimens made.**

1. Rickshaw
2. Carved shell
3. Beggar's bowl with inscription in Arabic
4. Cup
5. Jar
6. Carved head of a man
- 6a Carved head of a woman
7. Picture frame
8. Box made of cocoanut shell
9. Ladle
- 9a Ladle
10. A set of ten buttons made of cocoanut shell
11. Sample of coir
12. Carved cocoanut basket
13. Sample of rope made of cocoanut fibre
14. Hubble-bubble
15. Musical instrument
16. Carved shell with stand
- 16a Do.
17. Kamandalu
18. Cocoanut shell used by beggars.
19. Watch chain made of cocoanut fibre
20. Bullock yoke made of cocoanut fibre
21. Sokhat
22. Dhon for keeping oil
23. Hanging flower pot
- 23a Do.
24. Pair of Heads from Andaman Isles

### **(b) Unmanufactured specimens.**

1. Broom
2. Hammer
3. Hammer for beating coir
4. Brush
5. Kadjan, sample of

6. Husk
7. Fibre
8. Rafter
9. Cocoanut tree wood (two pieces)
10. Four bottles containing the following :—
  - (a) Arac
  - (b) Toddy
  - (c) Water taken from the cocoanut fruit
  - (d) Oil extracted from the cocoanut fruit
11. Bottle containing " Gur "
12. Husk used as pin-cushion

## SPECIMENS OF TEXTILES AND EMBROIDERED CLOTH.

### CASE No. 9.

#### 1. Embroidered Garment from Cutch.

This garment forms part of a Muhammadan lady's dress in Cutch and the decoration is made in the form of chain stitch embroidery.

2. Khinkhab from Ahmedabad.
3.           Do.
4. Khinkhab from Surat.
5.           Do.
6. Khinkhab from Ahmedabad.
7.           Do.
8.           Do.
9.           Do.
10.          Do.
11. Khinkhab from Surat.

Khinkhab is a thicker silk fabric with gold and silver designs worked into it. It may be either pure cloth of gold or silver, or a cloth in which gold and silver thread cover the greater portion of the surface and coloured silks are shown here and there to outline or pick out the design, and lastly cloth in which the major portions of the pattern are in gold and silver thread. Gold and silver wire drawing has been practised in India since early times and an attempt is made here to indicate briefly the main features of craft.

A bar of silver, about a foot long and about three-fourths of an inch thick near the middle and tapering at both the ends, is

first gilt. To do this, gold leaves are wrapped round it and the bar is then placed in a furnace till the gold fuses and unites with the silver. It is then inserted by one end in a round opening in a sheet of iron fixed in an upright position. The projecting portion is seized by a powerful clamp and pulled through the opening. This process is repeated, but openings of smaller and smaller size being used after time, till the gold coated silver bar is drawn out, to the thickness of a hair. The wire is now flattened by being hammered on an anvil, so skilfully that the wire is flattened uniformly. The flattened wire is next wound round silk thread in order to make the wire appear larger and thicker and to impart to it the flexible quality, and strength necessary to allow of it being woven. Silver wire is produced in the same way except that the bar is not gilt. By gold wire, we mean silver wire coated with pure gold in the manner described. Pure gold wire would be useless.

12. *Shālu* from Poona.

This is a cotton *sadi* with gold designs woven in the body of the fabric. It has a gold brocaded border and end pieces. Poona is famous for the manufacture of these garments.

13. *Lungi* from Karachi.

The *Lungi* is a long narrow strip of cotton worn by men round the head or as a band round the waist. This is made mostly in Sind. It is usually woven of finely spun and starched cotton, but the finer qualities are entirely of silk.

14. *Himru* from Surat.

The *himru* is cloth made of cotton, but so spun as to form a thick soft fabric that feels as if made of wool. It is also brocaded in silk, the major portion of which is somewhat clumsily carried behind from one point to the other in the design thus forming loose masses that contribute an extra and very warm layer. The *himrus* have therefore to be lined, and thus when made into garments, become literally warm clothing for the cold season. These are chiefly manufactured at Surat and Ahmedabad.

15. *Paithani* from Yeola.

This is a costly variety of *sadi* woven of the best quality of silk. These have generally broad borders and well formed pieces with often much of gold wire.

16. Embroidery from Hyderabad.

Embroidery is principally carried on at Hyderabad, Shikarpur in Sind; in Cutch; in Surat; and Bombay: and is executed in various materials such as silk on cotton, silk on silk, silk, gold and silver thread used simply or together, on cloth or satin for articles of dress, table cloths, cushions, covers, etc.

The design is first transferred or stencilled upon the cloth, which is then stretched upon a frame. The designs are then wrought by hand with coloured threads of silk or gold and silver by means of a needle. The varieties of stitches are numerous, but herein India, that known commonly as the "Chain stitch" is most used.

17. Cotton embroidery from Persia.

The specimen is from Shiraz in Persia.

18. Silk embroidered sadi from Benares.

19. Embroidery from Hyderabad.

20. Silk sadi from Pattan.

21. Silk sadi from Pattan.

This is better known as Patola silk sadi, one of the most beautiful and at the same time most interesting of the Indian Textiles. It is woven with the warps and wefts which have been separately tied and dyed by the Knot-dyeing process, and it is so arranged that in the loom, when the weft crosses the warp, each of the colours exactly comes in contact with the same colour in the warp. The principal places where this weaving is done are Cambay, Pattan and Surat. These sadees are generally used as special bridal garments in Guzrat.

22. Silk Sadi from Surat.

The sadi is a garment worn by Indian women and varies greatly in the material used and in the decorations employed according to wealth, position or caste of the owner. Even at the present day they are often made on handlooms. Some are woven entirely in cotton, or in cotton and silk (called Garbhasuti) or in silk, and are coloured either in red, blue, green or black or in any shade of these.

23. Silk sadi from Cambay.

This is an illustration of the form of embroidery called Chain stitch. This lends itself more readily to floral and other ornamentations, where curved lines are essential. In consequence, it is more freely used on silk, and other expensive materials where surface is not desired. It consists of a series of looped stitches thrown round the needle and inserted one after the other within the immediately preceding stitch, thus giving the effect of a chain. It is extensively employed in Bokhara, Peshawar, Guzerat, Kathyaware, Cutch and Sind.

24. Embroidered garment from Cutch.

See note to No. I.

25. Embroidery from Shikarpur.

This is an effective piece of embroidery worked in silk on coarse cotton ground with discs in red and the interspaces filled with

foliated work. Specimens are brought by traders from Bokhara.

26. Silk sadi-specimen of Knot-dyeing specimen.

The process of knot-dyeing may be described as follows:—The fabric is folded several times into halves until reduced to a square or rectangular piece measuring about a foot or a foot and a half in length and two or three folds in thickness. It is then damped and pressed over a block of wood with a mass of nails or pins fastened all over it in elaboration of some design. It is then removed from the block and given to a girl (the Bhandani) who has the nails of her thumb and forefinger purposely grown long with a view to their becoming an indispensable pair of pincers, by means of which minute particles of cloth may be laid hold of readily. The raised up portion indicated by the block are seized and tied by a string. Great skill is required not only to lay hold of all the layers of the cloth at once, but to seize each portion that it may crinkle in a particular manner, while being securely wound round and tied. The girl having finished her task the fabric is given to the dyer, who begins by immersing the folded up and completely tied cloth in the lightest shade that is intended to be given. It is then handed over to the Bhandani, again, who impresses it upon a second pattern block and proceeds to tie a still further series of raised up points. It is again dyed, in a darker colour and the process is continued until the pattern and scheme of colour is completed. The threads are then unwound and the fabric opened out, when it will be found to have a regular pattern covering it in a variety of colours the series of dyes have penetrated to only those portions which have not been knotted. The work is generally known as Chunri and is manufactured in Guzrat, and in Kathiawar.

27. Embroidered garment from Cutch.

See note to No. I.

28. Silk sadi from Surat.

See note to No. 22.

29. Embroidery from Bijapur of the 14th century presented by Mrs. C. L. Burns.

30. Embroidered scarf from Hyderabad.

The specimen resembles the embroidery with the meshes of net that was prevalent in mediaeval times.

Models exhibited in the case.

- (1) Tannaiwalla drawing out very fine wire.
- (2) How gold wire is flattened by manual process.
- (3) Winding wire round silk thread manually.



- (4) Model showing how spangles are made.
- (5) Embroiderers embroidering with gold thread.
- (6) Embroiderer at work-Bharatkam.

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**MODELS OF THE FOLLOWERS OF THE  
 DIFFERENT INDIAN RELIGIOUS SECTS.**

**CASE No. 10.**

1. Follower of Sri Ramanujacharya (ascetic).
2. Follower of Sri Ramanajacharya (laity).
3. Follower of Sri Madhvacharya.
4. Follower of Saint Ramdas.
5. Varkari—Follower of the saints of Maharastra of the 16th century.
6. Maratha Gosawee—Follower of the saints of Maharastra.
7. Bairagi—Follower of Sri Ramananda.
8. Gosawi—Follower of Sri Ramananda.
9. Female Bairagi—Follower of Sri Ramananda.
10. Sitapanthi Bairagi—Follower of Sri Ramananda.
11. Follower of Kabir Saheb.
12. Follower of Kabir Saheb (Benares).
13. Follower of Dadu—Dadupanthi.
14. Bairagi called Naga—a division amongst Dadupanthees.
15. Satnami.
16. Ramsnehi.
17. Follower of Sri Nimbarak.
18. Follower of Lord Gauranga or Sri Chaityana.
19. Follower of Swami Narayen.
20. Bendiwal.
21. Follower of Sri Vallabhacharya.
22. Civa—Bhakta of the time of Patangali about 150 B.C.
23. Worshipper of Civa called Pasupata (ascetic)—earliest worshippers of Civa.
24. Worshipper of Civa called Pasupata (laity)—earliest worshippers of Civa.

25. Pasupata as re-organised by Lakula in 2 A.D.
26. Pasupata (ascetic) follower of Lakula in Bana's time.
27. Pasupata as described by Bana in King Harsha's time.
28. Worshipper of Civa called Kapalika.
29. Worshipper of Civa called Kalamuka.
30. Worshipper of Civa called Mallari before 8 A. D.
31. Worshipper of Civa called Mallari shown as barking like dogs.
32. Models showing modes of mortification practised by the ascetics.
33. Worshipper of Civa as Khandoba called Vaghya.
34. Dandi as re-organised by Sri Shankaracharya.
35. Aghori—now a very rare type.
36. Aghori—now a very rare type.
37. Paramhansa.
38. Gorakhnathi.
39. Goraknathi from Nepal.
40. Bairagi called Bhairava (worshipping Civa in his Bhairava aspect).
41. Lingayet.
42. Lingayet (Jangam) from Nepal.
43. Lingayet carrying the lingam on his chest.
44. Lingayet Trader.
45. Lingayet lady.
46. Lingayet carrying the lingam on his head.
47. Lingayet—Jangam in South/North.
48. Bairagi.
49. Model of Murlees and Vaghy as.
50. Model of Gondhalees.
51. Model of Bharadee.
52. Troupe of Aradhees.
53. Model of Vasudev.
54. Worshipper of Yellama.
55. Worshipper of Mariayee.
56. Surya-worshipping Bairagi.
57. Nanakshahi.
58. Do.
59. Do.
60. Nirmalee.
61. Do.

62. Udasee.
63. Akali.
64. Nanakshai.
65. Jain Yati.
66. Jain Acharya.
67. Female Jain Yati.
68. Buddhist at prayer.
69. Buddhist.
70. Gorakhnathi.
71. Gorakhnathi.
72. Ramanandee Gosawee.
73. Nanakshai.
74. Nanakshai.
75. Model of a Agnihotri.
76. Model of a Vamachari (Devi-worshipper).
77. Model of a Dakshinachari (Devi-worshipper).

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## MODEL OF SILK AND COTTON MILL FROM POONA.

### CASE No. II.

Silk weaving in Poona is one of the flourishing industries of the town, and the silk used is chiefly imported from China through Bombay. The quality used is other than the first. In the beginning raw silk is made over to the reeler or Rahatkari, under whose care it is reeled, sorted and twisted. For sorting, the silk is thrown on a bamboo cage called Phalka. This is worked by a man sitting in front of it, its centre rod being placed against the left foot and setting it in motion by twisting the end of the rod between the two toes. The silk is then wound round the reels called Asari (a piece of stick passed through a hollow reed and fixed in the cleft end of a piece of bamboo). It is then twisted. With the help of a small wheel, the silk is wound from reels on hollow reed bobbins called Garolees. These bobbins are then arranged on the throwing machine called Tat, and by means of a wheel and axle the fibers of each bobbin are twisted together and guided through a ring round the Drum-Dhol, and then reeled on smaller Phalki. It is then called silk yarn, which is then bleached and

dyed. Then it is taken to be sized and finally put on the loom, where it is woven into cloth.

*Poona City Gazetteer.*

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#### CASE No. 12.

**SITA IN ASOKVAN.**—This Scenic representation represents Sita, consort of Rama the 7th incarnation of Vishnu seated under a tree in the Asoka grove of Ravan, King of Lanka (Ceylon), when captive at his court. The story of her following her husband during the time he was banished from the court at Auyodhya, and her sharing with him the troubles and dangers of a forest life, her captivity by Ravan, her imprisonment at his court, and her final liberation, is the subject of the celebrated poem Ramayana by Valmiki, the Homer of India.

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#### INDIAN HEAD-DRESSES AND TURBANS.

##### CASE No. 13.

##### **Turbans and Head-dresses.**

1. Plaster head of a Maratha from Baroda with the Maratha turban.
2. Plaster head of a Bhatia from Cutch with the Bhatia turban.
3. Plaster head of a Bhatia from Kathiawar with the Bhatia turban.
4. Plaster head of a Vania from Ahmedabad with the Vania turban.
5. Plaster head of a Kayastha from Gujrat with the Kayastha turban.
6. Plaster head of a Maratha from Deccan with the Deccani Maratha turban.
7. Plaster of a Hindu from Multan with the Mooltani Hindu turban.
8. Plaster head of a Hindu from Hyderabad (Sind) with the Hindu turban.
9. Plaster head of a Lad Vania with the turban of a Lad Vania.
10. Plaster head of a Hindu from Delhi with the Hindu turban.
11. Plaster head of a Hindu from Bhavnagar with the Bhavnagar Hindu turban.

12. Plaster head of a Prabhu with the Prabhu turban.
13. Plaster head of a Deccani Brahmin with the Brahmin turban.
14. Plaster head of a Chapadia with the Chapadia turban.
15. Plaster head of a Bhangsali Vania with the Bhangsali turban.
16. Plaster head of a Khoja with the Khoja turban.
17. Plaster head of a Bohora from Ahmedabad with the Bohora turban.
18. Plaster head of a Bohora from Surat with the Bohora turban.
19. Plaster head of a Memon with the Memon turban.
20. Plaster head of a Memon with the turban folded according to the manner of the Khojas.
21. Plaster head of a Maratha from Kolhapur with the Maratha turban.
22. Plaster head of a Gosawee with the Gosawee cap.
23. Plaster head of a Hindu in Goa with the Hindu cap.
24. Plaster head of a Jew from Baghdad with the Hebrew cap.
25. Plaster head of a Muhamadan from North India with a cap.
26. Plaster head of a Muhamadan with the Fez cap.
27. Plaster head of a Parsee with the head-gear called Phæta.
28. Plaster head of a Dastur with the Dastur turban.
29. Plaster head of a Parsee with the Parsee turban.
30. Plaster head of a Koli from Bombay with the Koli cap.
31. Plaster head of a Marwaree with the Marwaree turban. (Ghorwadia.)
32. Plaster head of an Afghan with the head-gear of Afghan in Afghanistan.
33. Plaster head of a Muhamadan from Peshawar with the Muhamadan head-dress.
34. Plaster head of an Arab with the Arab head-dress.
35. Plaster head of a Vania from Surat with the Vania turban.

**Clay Models in full dress representing the various castes  
wearing the above turbans and Head-dresses.**

1. Model in full dress of a Bombay Prabhu.
2. Model in full dress of a Bombay Fisherman.
3. Model in full dress of a Deccani Brahmin.

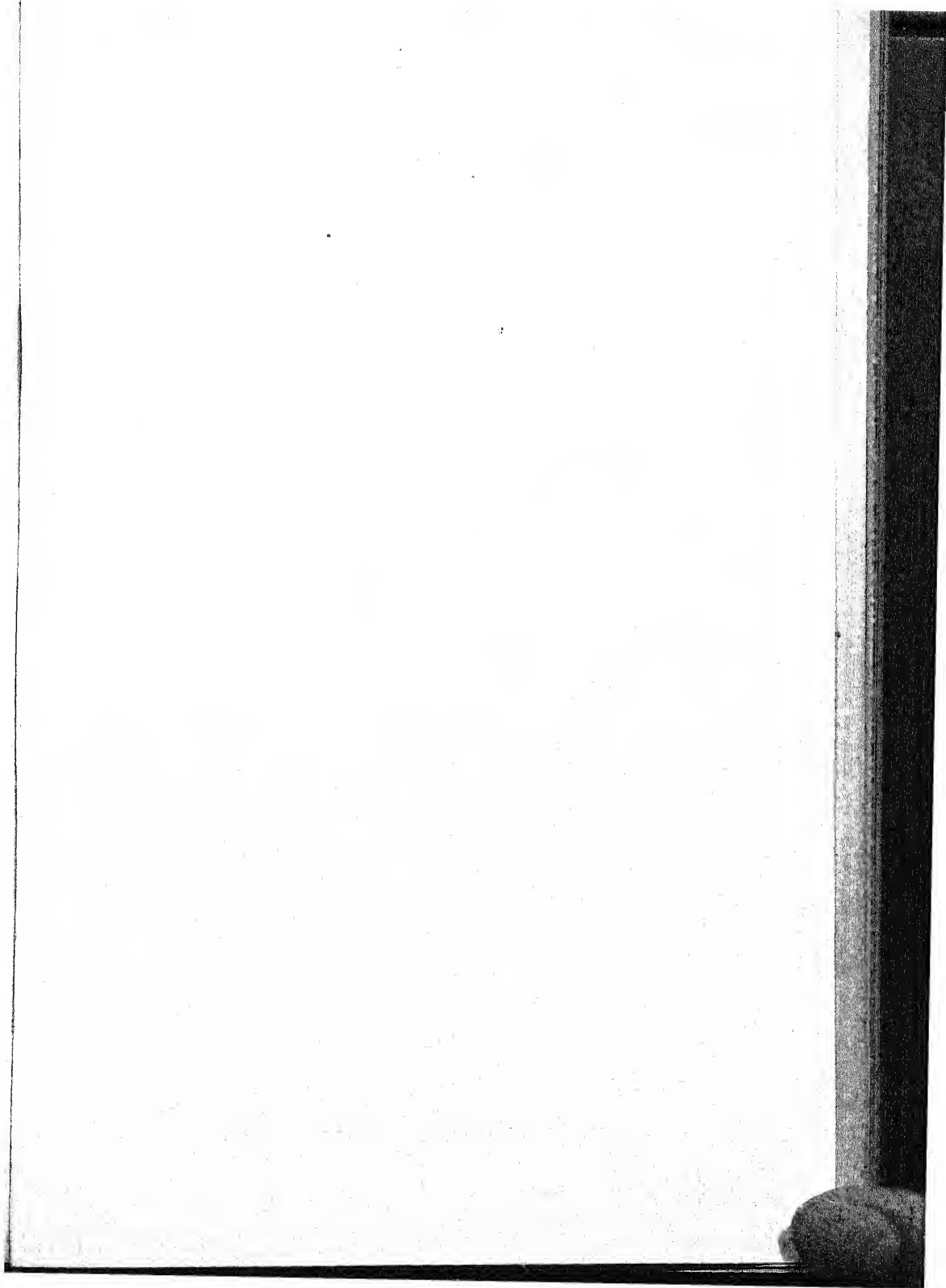
4. Model in full dress of a Kayastha.
5. Model in full dress of a Bhatia from Kutch.
6. Model in full dress of a Vania from Bhavnagar.
7. Model in full dress of a Vania from Ahmedabad.
8. Model in full dress of a Bhatia from Kathiawar.
9. Model in full dress of a Khoja.
10. Model in full dress of a Bhangsali.
11. Model in full dress of a Vania from Surat.
12. Model in full dress of a Chapadia.
13. Model in full dress of a Marwadee.
14. Model in full dress of a Memon.
15. Model in full dress of a Muhamadan in Fez.
16. Model in full dress of a Muhamadan from North India.
17. Model in full dress of a Hebrew from Baghdad.
18. Model in full dress of an Afghan.
19. Model in full dress of an Arab.
20. Model in full dress of a Hindu from Hyderabad (Sind).
21. Model in full dress of a Maratha from Kolhapur.
22. Model in full dress of a Parsee Dastur.
23. Model in full dress of a Parsee.
24. Model in full dress of a Parsee wearing Phæta.
25. Model in full dress of a Hindu in Goa wearing the Hindu cap.
26. Model in full dress of a Bohora in Ahmedabad.
27. Model in full dress of a Hindu in Delhi.
28. Model in full dress of a Deccani Maratha.
29. Model in full dress of a Muhamadan from Peshawar.
30. Model in full dress of a Memon.
31. Model in full dress of a Lad Vania.
32. Model in full dress of a Maratha wearing the Baroda turban.
33. Model in full dress of a Hindu from Multan wearing the Hindu turban.
34. Model in full dress of a Vairajee.
35. Model in full dress of a Bohora from Surat wearing the Bohora turban.

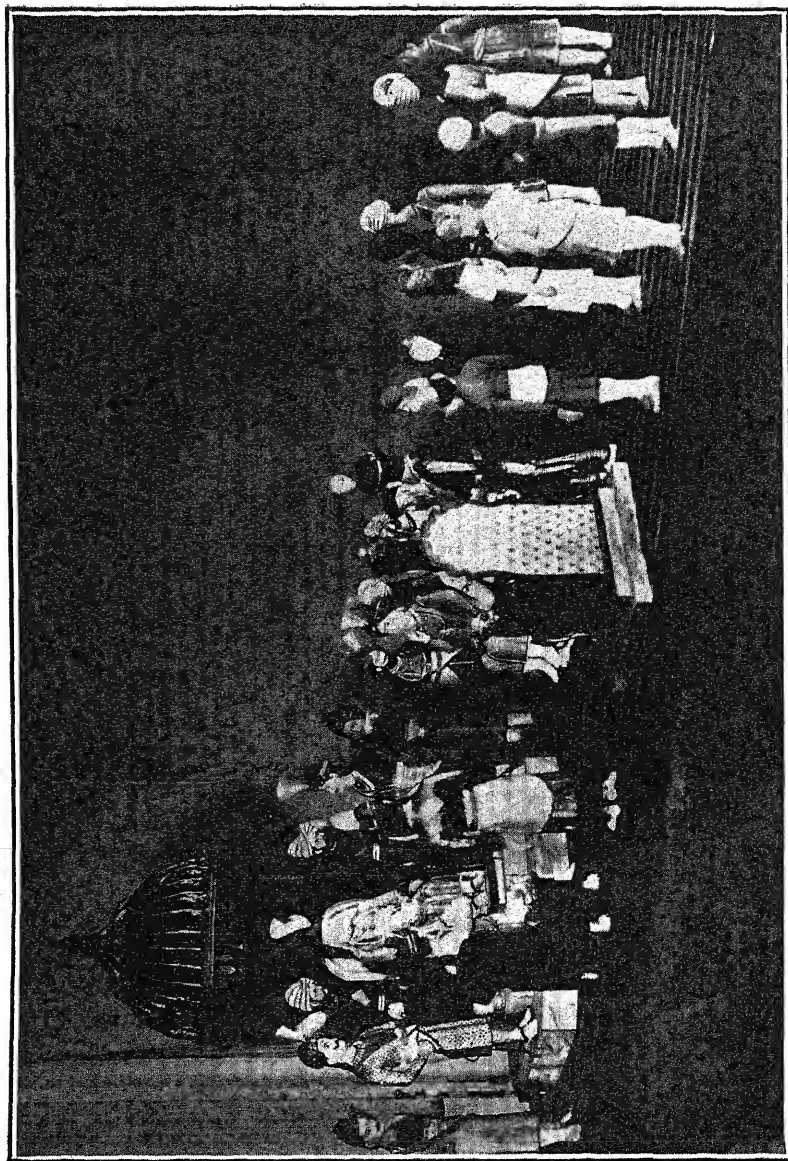
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CASE No. 14.

EMBASSY OF SRI KRŠNA.—Here Sri Kṛṣṇa is shown as performing the office of the Peace-Maker between the Kauravas and the Pandavas at the court of the Kauravas at Hastinapur.







Scenic representation of the Embassy of Sri Crsna at the Court of the Kavras  
taken from the Mahabharat.

then presided over by the aged king Dritarastra. The history of the war after the failure of the mission forms the subject of the great poem Mahabharat the composition of which has been ascribed to different authors.

## INDIAN REGIMENTS.

### CASE No. 15.

1. 1st Brahmins.  
3rd Brahmin, Subedar.  
3rd Brahmin.
2. Queen Victoria's Own Rajput Light Infantry.  
Queen Victoria's Own Rajput Light Infantry.  
5th Light Infantry, Havildar.
3. 6th Jat Light Infantry, Havildar.  
7th Duke of Connaught's Own Rajputs.  
8th Rajputs.
4. 11th Rajputs.  
12th Pioneers.  
13th Rajputs.
5. 16th Rajput, Subedar.  
19th Panjabees, Jemadar.  
19th Panjabees.
6. 19th Panjabees, Jemadar.  
19th Panjabees.  
19th Panjabees.
7. 20th Duke of Cambridge's Own Infantry.  
21st Panjabees, Subedar Major.  
22nd Panjabees.
8. 23rd Sikh Pioneers.  
24th Panjabees, Subedar.  
24th Panjabees, Subedar.
9. 24th Panjabees.  
25th Panjabees, Subedar Major.  
27th Panjabees, Havildar.
10. 28th Panjabees, Subedar Major.  
29th Panjabees, Subedar Major.  
30th Panjabees.
11. 31st Panjabees, Havildar.  
32nd Sikh Pioneers.  
33rd Panjabees Subedar.

12. 35th Sikh, Subedar.  
37th Dogras.  
38th Dogras, Subedar Major.
13. 33rd Panjabees.  
34th Royal Sikh Pioneers.  
34th Sikh Pioneers, Subedar Major.
14. Queen Victoria's Own Corps and Guides.  
31st Mountain Battery Gunners.  
King George's Own Sappers and Miners.
15. 54 Sikhs.  
55th Cooke's Rifles.  
56th Panjab Rifles.
16. Queen Victoria's Own Sappers and Miners, Subedar.  
Queen Victoria's Own Sappers and Miners.
17. 93rd Burma Infantry, Subedar.  
94th Russel Infantry.  
95th Russel Infantry.
18. 96th Berar Infantry.  
97th Deccan Infantry.  
98th Infantry.
19. 106th Hazara Pioneers.  
107th Pioneers.  
108th Infantry.
20. 124th Duchess of Connaught's Own Baluch Infantry.  
125th Napier's Rifles, Subedar Major.  
125th Napier's Rifles, Havildar.
21. 15th Ludhiana Sikhs.  
15th Ludhiana Sikhs.  
15th Ludhiana Sikhs.
22. 53rd Sikh Frontier Force.  
51st Sikh Frontier Force.
23. 127th Queen Mary's Own Baluch Light Infantry.  
127th Queen Mary's Own Baluch Light Infantry.  
123rd Outram's Rifles.
24. 103rd Maratha Light Infantry.  
102nd King Edward's Own Infantry.  
101 Grenadiers.
25. 3rd Queen Alexandra's Own Gurkha Rifles.  
2nd King Edward's Own Gurkha Rifles.  
34th Sikh Pioneers.

26. 45th Rattray's Sikhs.  
45th Rattray's Sikhs.  
46th Panjabees.
27. Bharatpur Infantry.  
Sirmoor Sappers.  
1st Kashmere Infantry.
28. 39th Garwal Rifles.  
127th Queen Mary's Own Baluch Infantry.
29. 83rd Wallajabad Light Infantry.  
88th Carnatic Infantry.  
76th Panjabees.
30. 75th Carnatic Infantry.  
74th Panjabees.  
73rd Carnatic Infantry.
31. 69th Panjabees.  
64th Pioneers.  
63rd Palamkotta Infantry.
32. 59th Scindia Rifles.  
57th Wilde's Rifles.  
56th Panjabee Rifles.
33. The Khyber Rifles.  
6th Gurkha Rifles.  
4th Gurkha Rifles.
34. Jindh Infantry.  
Alwar Infantry.  
Kashmere Mountain Battery.
35. 41st Dogras.  
43rd Erinpura Regiment.  
Mewar Infantry.
36. 110th Maratha Light Infantry.  
109th Infantry.  
108th Infantry.
37. 114th Marathas.  
113th Infantry.  
112th Infantry.
38. 122nd Infantry.  
119th Infantry.  
116th Marathas.

39. 64th Pioneers.  
63rd Palamkota Light Infantry.  
61st King George's Own Pioneers.
40. 91st Panjabees.  
87th Panjabees.  
86th Carnatic Infantry.
41. 3rd Sappers and Miners.  
3rd Sappers and Miners, Jemadar.
42. 59th Scindia Rifles.  
48th Pioneers.  
46th Panjabees.
43. 76th Panjabees.  
84th Panjabees.

### ETHNOLOGICAL FIGURES.

#### CASE NO. 16.

1. Model of Patangbag.
2. Model of a Sitarbag.
3. Model of a Lucknow Muhamadan.
4. Model of a Barber.
5. Model of a Sindhi.
6. Model of a Persian.
7. Model of a Persian Muhamadan Shia.
8. Model of an Afridi.
9. Model of a Snake-charmer.
10. Model of a Lucknow Muhamadan.
11. Model of a Butler.
12. Model of a Bhistee.
13. Model of a Dancing-girl with attendants.
14. Model of Opium-eater.
15. Models of Muhamadans showing different attitudes taken  
by them when offering prayers.
16. Model of a Surimar.
17. Model of a Gurujmar in Bombay.
18. Model of a Dandumar in Bombay.
19. Model of a Banwa Faquir.
20. Model of a Muhamadan Faquir.
21. Model of a Gurujmar from Northern India.
22. Model of Chistia Faquir.



23. Model of a Madaria Faquir.
24. Model of a Muhamadan Faquir.
25. Model of a Dandumar in Bombay.
26. Model of a Muhamadan Faquir.

**A Descriptive note on these Faquirs is given at the  
end of the list.**

27. Model of a Hooka-smoker.
28. Pair of Arabs.
29. Pair of Sidees from the Arabian coast.
30. Pair of Persians.
31. Pair of Suni Muhamadans.
32. Pair of Baluchees.
33. Pair of Baluchees.
34. Pair of Deccani Suni Muhamadans.
35. Pair of Bohoras from Ujjain.
36. Pair of Bohoras from Surat.
37. Pair of Memon-Muhamadans.
38. Pair of Khojas.
39. Pair of Nawab-jemindars from Lucknow.
40. Pair of Bakas from Northern India.
41. Pair of Nawab-jemindars from Lucknow.
42. Pair of Bombay Shenvees.
43. Pair of Bombay Prabhus.
44. Pair of Bombay Fishermen.
45. Pair of Bombay Bhatias.
46. Pair of Vantias in Bombay.
47. Pair of Parsees in Bombay (old type).
48. Pair of Parsees.
49. Pair of Kamatees.
50. Pair of Malees.
51. Pair of Agri-Kolees.
52. Pair of Kharvas.
53. Pair of Marathas from Koncan.
54. Pair of Deccani Marathas.
55. Pair of Deccani Brahmins.
56. Pair of Nagri Patils.
57. Pair of Sikhs from Panjab.
58. Pair of Jewellers from Delhi.
59. Pair of Rustojees.

60. Pair of Cloth-merchants from Delhi.
61. Pair of Vanias from Bhavnagar.
62. Pair of Vanias from Bhavnagar.
63. Pair of Kayasthas from Lucknow.
64. Pair of Marwarees from Jodhpur.
65. Pair of Hindus from Multan.
66. Pair of Vanias from Surat.
67. Pair of Singhalees from Ceylon.
68. Pair of Uryas from Orissa.
69. Pair of Madrasees.
70. Pair of Mangs.
71. Pair of Nepalees.
72. Pair of Bengalees.
73. Pair of Dhobees.
74. Pair of Fruit-sellers in Northern India.
75. Pair of Gowlees.
76. Pair of Vaghrees.
77. Pair of Chamars.
78. Pair of Yahudees.
79. Model of a Bene-Israel
80. Model of a Milk-carrier.
81. Model of a Coach-man.
82. Model of a Syce.
83. Model of a Lamp-bearer.
84. Model of a Chaprasee.
85. Model of a Parsee Dastur.
86. Model of a Parsee in full dress.
87. Model of a Singhalee Fruit-seller.
88. Model of a Athlete from Panjab.
89. Model of a Maratha from Bankote.
90. Model of a Hindu Bride and Bridegroom.
91. Model of a Brahmin from the Karnatic country.
92. Model of a Choba.
93. Palanquin-bearers in Bombay.
94. Dhooly-bearers in Northern India.
95. Priest of the Jainas of the Swetambari order.
96. Model of a Buddhist from Nepal.
97. Model of a Brahmin going to the Temple.
98. Model of a Munja.
99. Model of a Nautch-girl.

100. Pair of Sontals.
101. Pair of Katkarees.
102. Pair of Gonds.
103. Pair of Vaidus.
104. Model of a Brinjaree.
105. Model of a Madari.
106. Model of a Kangal.
107. Model of a Balsanthose.
108. Pair of Brinjarees.
109. Model of a Maratha from the Sahyadrees.
110. Model of a water-carrier with his Pakhal carried on an ox in old days.
111. Model of a Dhangar.
112. Model of a Jat.
113. Wooden Model of the Parsee Tower of Silence.
114. Model of Heads of Plaster of Paris of Trans-Himalayan Tribes.

### FAQIRS.

The word Faquir signifies poor, and is used in the sense of being in need of mercy, and poor in the sight of God, rather than in need of worldly assistance. The term is generally used for those, who lead a religious life. Faquirs are divided into two classes (1) Ba-Shar, that is, those who govern their conduct according to the principles of Islam and (2) the Be-Shar, those who do not rule their lives according to the principles of Islam, although they call themselves Mussalmans. The former are called Salic or "travellers on the pathway to heaven" and the latter are either Azad (free) or Majzud (abstracted). The Salic Faquirs who perform the Zikrs are divided into various orders, but their chief distinction consists in their Silsilah or chain of succession from their great teachers the Khalifahs, Abu Bakr and Ali, who are said to have been the founders of the religious orders of Faquirs.

The Majzud Faquirs are totally absorbed in religious reveries. The Azad faquirs shave their faces and lead a life of celibacy. Neither sect can be said to be true Mussalmans as they do not say the regular prayers, or strictly observe the ordinances of Islam.

### The Origin of the Order of Faquirs.

In the first year of the Hijra, forty-five citizens of Mecca joined themselves to as many of Medina, and took an oath of fidelity to the doctrines of the Prophet and formed a sect or fraternity, the object of which was to establish among themselves a community of property, and to perform every day certain religious practices in a spirit of penitence and mortification. To distinguish themselves from other Muhamadans they called themselves Faquirs. Following their example Abu Bakre and Ali established during the life time of the Prophet and under his own eyes, religious orders over which they separately presided, each establishing religious exercises and vows peculiar to his own followers. Both Abu Bakre and Ali passed on their office to successors, some of whom led by excessive zeal wandered away from the rules of their society, and instituted a multitude of new religious orders.

The first order of anchorites was formed by Uwaisal-Karami (657 A. D.) in Yaman, but on account of the severity of its rules it attracted only fanatics and credulously ignorant people during the first days of Islam.

In A. D. 766 Shaik Alwan founded the first regular order of faquirs known as Alwaniyah with its special rules and religious exercises. His Shrine is at Jeddah.

The Naqsh-andiyah Sect are the followers of Khajah Pir Muhamad Nasqshband, who lived about A. D. 1319 and whose Shrine is at Qasri Arifan in Persia. They perform their devotion in silence and are very numerous.

The Bakhtashyiah Sect was founded by Haji Bakhtash about 1357 A. D. He was a native of Bohkara. The order which he founded is celebrated as being that which gave rise to the fanatical order of Janissaries. The symbol of their order is the mystic girdle. His shrine is at Kir Sher.

The Maulawiyah Sect is the most popular order in the Turkish Empire. They are known to the Europeans as Dancing Darwishes. It was founded by Maulavi Jalala-u-dinar Rumi, the author of Masnawi.

The Quadriyah Sect was founded by the celebrated Saiyid Abdul J. Quadir whose shrine is at Baghdad. He lived about

1165 A. D. Most of the Sunni Maulawis on the North West Frontier of India are members of this order.

The Chistiyah Sect are followers of Muninudin Banda Navaz, whose Shrine is at Gulburga. The Shias generally become faquirs of this order.

The Jalaliyah Sect was founded by Saiyid Jalala-u-din or Bokhara. They are met with in numbers in Central Asia. Religious mendicants often belong to this order. The faquirs wear ochre-coloured garments and usually carry a whip in their hand.

The Suhrwardiyah Sect are a popular order in Afghanistan. They are the followers of Shihabu-din of Suhrward of Hasan Bisri. These are the most noted orders of the Ba-Shar faquirs.

The Be-Shar faquirs are very numerous, the popular order in India being that of Murdariah, founded by Zinda Shah-Murdar of Syria, whose shrine is at Makanpur in Oudh. From these have sprung the Malang faquirs, who crowd the Bazars of India. They wear their hair matted and tied in a knot and are not allowed to marry.

The Rufa-iyah order is also a numerous one in some parts of India. They practise the most severe discipline and mortify themselves by beating their bodies. In India, one often sees them carrying a Gorej or suri or knife in hand. This order was founded by Sayid Ahmed Rufai about 1482 A. D. He has a shrine at Baghdad.

The more zealous faquirs subject themselves to most austere discipline, and shut themselves up in cells to pray and meditate. Some stand for whole nights in uncomfortable positions repeating the name of "*Allah*"; some sit with their feet on the ground their hands resting on their knees, and some fast for so many as forty days.

*Authority :—Dictionary of Islam by T. P. Hughes.*

## OLD HISTORICAL FIGURES.

CASE No. 17.

1. Maratha horseman in the time of the Peshwas as sketched in the camp, 1775.
2. Pandit Pradhan in the time of the Peshwa about 1775.

## 3. Brinjari on the march.

The Brinjarees were employed about 1804 by merchants and bankers to guard their effects and were noted for their fidelity and courage. (E. Orme, 1807.)

## 4. Durbaree from Udaipur, 1876.

## 5. Gosawee Mahant, 1813.

## 6. Follower of the Gosawee Mahant, 1813.

## 7. Maratha Sirdar in Scindia's camp.

## 8. Model of a Dancing Girl in Scindia's camp containing five figures.

## 9. Model of a Thug.

## 10. Infantry man in the time of Sivaji (copied from a miniature in the Royal Library at Paris, 1821).

## 11. Infantry man in the Beejapur Army.

## 12. Model of a Rajput.

The Rajputs are tall, well-made, and possess proud and expressive features of great beauty. They wear the beard very long—divided into two pointed whiskers, which forms their distinctive peculiarity. Their only profession is that of arms, and in Mewar they constitute the aristocracy and the army.

## 13. Model of a standard bearer in the Gaikwar's army.

## 14. Model of a Soldier of the Nizam.

## 15. A Chittary.

The Chittary was more employed by the Moghul government in preference to other castes of the Hindus, and were very numerous in Northern India. They dress like Muhammadans. ("Costume of Hindustan" by Sovlyn 1807).

## 16. Model of Nakhi-ka-khusti.

## 17. Model of a Rohila.

## 18. Model of a Polygar.

## 19. Model of a Soldier belonging to Tipu Sultan's army.

## 20. Hiracarr.

Hiracarr was one who carried messages, letters, etc., ran in processions, carried a short spear or pointed stick, and



waited in attendance. He used to be dressed in Muhammedan costume wearing round his neck large pebbles. They were frequently employed as spies.

21. A Jahagirdar at the court of the Rana of Udaipur.

22. Bhat.

An extraordinary tribe, whose profession was to flatter and puff, and spread reports in commendation of those who employ them. He used to be in the dress of an ordinary Hindu, holding a sword in his left hand and in his cumberband he had a dagger.

23. Brijbasee in domestic accoutrements, 1804.

24. Brijbasee in military accoutrements, 1804.

25. Sepoy under the Moghul Government of Bengal, 1804.

26. Hindu Soldier under the Moghul Government of Bengal, 1804.

The soldier is dressed in cotton quilted armour, with his match lock-gun, his shield in his right side suspended from his arm, near it is his powder horn, and in his waist band a dagger.

27. Muhammadan in the camp of Scindia, 1813.

28. Maratha in the camp of Scindia, 1813.

29. Follower of Pandit Pradhan in Peshwa's court.

## INDUSTRIAL FIGURES.

CASE No. 18.

Model of a mill for extracting oil.

Model of a kiln for melting glass.

Model showing how glass is blown.

Model showing how fish (Bombay Ducks) are cured.

Model of a Grain-parcher (Bhadbhunja).

Model of a Grain-parcher preparing parched rice.

Model of a Basket-maker from Punjab.

Model of a Basket-maker from the Deccan.

Model of a Khumbhar shaping earthen pots on the wheel.

Model of a Khumbhar shaping earthen pots on the wheel, 2nd stage.

Model of a Khumbhar shaping earthen pots on the wheel, 3rd stage.

Model of a Khumbhar showing how earthen pots are fired.

Model of a Gowlee milking cow.

Model of a Kulpiwalla.

Model of a Kulpiwalla.

Model of a Sweet-meat seller.

Model of a woman churning curds to obtain butter.

Model showing how oxen are shod in India.

Model of a farmer ploughing his field.

Model showing how corn is reaped in India.

Model of a Flour Hand-mill.

Model of a Cotton cleaner.

Model of a primitive spinning wheel.

Model of Dyers dyeing cloth.

Model of a Printer printing cloth.

Model of an embroiderer working on cotton cloth.

Model showing how gold or silver wire is drawn.

Model showing how gold or silver wire is wound round silk thread.

Model of a Tannaiwalla drawing out very fine wire.

Model of a workman flattening wire by manual process.

Model showing how spangles are made.

Model of an embroiderer embroidering with gold thread.

Model of embroiderers embroidering bharatkam.

Model of a carpenter carving wood.

Model of a wood-carver from Surat.

Model of a stone-cutter.

Model showing how the surface of the stone is dressed.

Model of a stone carver inlaying stone.

Model showing the process called shape-making in the preparation of silver pots.

Model of a Tin-smith tinning copper pots.

Model of a Turner turning copper pots on the lathe.

Model showing how repousse work is done on copper.

Model showing how repousse work is done on silver.

Model of a Goldsmith at work.

Model of a Silversmith from Cutch.

Model of a Dealer in Bidree-work.

Model of an enameller from Jeypur.

Model of a groupe of workers damascening gold.

Model showing how ivory bangles are made.

Model of a Knife-grinder.

Model of a Sugarcane press.

Model of a Carver on vory.

Model of a Barber.

## INDIAN CAVALRY REGIMENTS.

### CASE No. 19.

#### Body Guards.

##### GOVERNOR-GENERAL'S BODY-GUARD.

Raised at Benares in September 1773 by Capt S. Toone, under the official designation of "The Governor-General's Troop of Body-Guard, but was at first generally known as the "Governor's Troop of Moghuls." The present designation was first used in 1781.

##### GOVERNOR'S BODY-GUARD, MADRAS.

Formed in 1778 as a small body of European troopers. Expanded in 1781 to one European and one Native troop under Lt. P. Sullivan. Reduced to one Native troop in 1784. Re-organised in 1808 and again in 1820 as a body of details borne on the strength of regular regiments of Madras Cavalry. Reformed as a separate body in 1897.

##### GOVERNOR'S BODY-GUARD, BOMBAY.

Raised at Poona in 1865 from a portion of the Southern Maratha Horse, retained for the purpose when that corps was disbanded. Re-organised in 1895.

*1st Duke of York's Own Skinner's Horse*, comprising (a) the late 1st D. Y. O. Lancers (Skinner's Horse) and (b) Skinner's Horse amalgamated in 1921 and received the present designation in 1922. (a) 1st D. Y. O. Skinner's Horse. Raised in 1803 by Capt. J. Skinner from a body of Perron's Horse (in Scindia's service), who came over to the British after the battle of Delhi. Saw service in Bhuratspore, Candahar 1842 and Afghanistan 1878-1880 and Pekin 1900. (b) 3rd Skinner's Horse raised in 18 at Hansi by Lt.-Col. J. Skinner. Saw service at Ghuznee 1839, Moodkee, Aliwal Afghanistan 1878-1880, Punjab Frontier.

*3rd Cavalry* comprising (a) the late 5th Cavalry and (b) 8th Cavalry amalgamated in 1921 and received the present designation in 1922. 8th Cavalry raised at Sultanpore in 1846 by Capt. W. H. Ryves. Saw service in Afghanistan in 1878-1880.

*4th Duke of Cambridge's Own Hodson's Horse*, comprising (a) the late 9th Hodson's Horse and (b) 10th D.C.O. Lancers.

9th Hodson's Horse raised in 1857 as a separate risallha in Punjab and embodied under the designation of Hodson's Horse in the camp before Delhi by Lt. W. S. R. Hodson. Saw service at Delhi 1857, Lucknow, Chitral, and Punjab Frontier.

10th D.C.O. Lancers (Hodson's Horse) raised in separate risallahs in Punjab in 1857 and under designation of Hodson's Horse, embodied in camp before Delhi by Lt. W.S.R. Hodson. Saw service at Delhi, Lucknow, Abyssinia, Afghanistan 1878-1880.

*5th King Edward's Own Probyn's Horse* comprising (a) late 11th K. E.O. Lancers and (b) 12th Cavalry, amalgamated in 1921 and received the present designation in 1922.

11th K.E.O. Lancers raised at Lahore in 1857 by Capt. F. Wales and was first known as "Wales Horse." Saw service at Lucknow, Taku Forts, Pekin 1860, Afghanistan 1878-1880, Chitral and Punjab Frontier. 12th Cavalry raised at Lahore in 1857 by Capt P. R. Hockin. Saw service in Abyssinia, Cabul 1879 and Afghanistan 1878-80.

*8th King George's Own Light Cavalry* comprising (a) late 26th K.G.O. Cavalry and (b) 30th Lancers amalgamated in 1921 and received the present designation in 1922.

26th K.G.O. Cavalry raised in 1787 by Capt.H. Darley as the 5th regiment of Madras Native Cavalry. Saw service at Serin-gapatam, Ava, Afghanistan 1878-1880 and Burma 1885-87.

30th Lancers raised at Mominabad in 1825 by Sir John Gordon, Bart., as the 4th regiment of Nizam's Cavalry.

*9th Royal Deccan Horse* comprising (a) late 20th Royal Deccan Horse and (b) 29th Lancers (Deccan Horse) amalgamated in 1921 and received the present designation in 1922.

20th Royal Deccan Horse raised in 1826 from Nawab Lalau-daulla's, Capt. Davis' and Capt. Clark's risallahs of the Nizam's Reformed Horse, and was originally styled the 1st regiment of Nizam's cavalry 29th Lancers, (Deccan Horse) formed in 1826 from Nawab Murtiza Yar Jang's, Captains Hallis' and Smith's risallahs of the Nizam's reformed Horse and was styled the 2nd Regiment of Nizam's cavalry.

*10th Queen Victoria's Own Corps of Guides Cavalry.* Raised at Peshawar in 1846-47 by Lieut. H. B. Lumsden as the Corps of Guides, and received the present designation in 1922. Saw service in Punjab, Delhi, Afghanistan, Chitral and Punjab Frontier.

*11th Prince Albert Victor's Own Cavalry* comprising (a) 21st Cavalry (Daly's Horse) and (b) 23rd Cavalry, amalgamated in 1921 and received the present designation in 1922.

21st P. A. V. O. C. (Daly's Horse) raised at Peshawar in 1849 by Lieut. H. Daly as the first regiment of Punjab cavalry. Saw service at Delhi, Lucknow, and Afghanistan 1878-80.

*12th Cavalry Frontier Force* comprising 22nd Sam Browne's P.A.V. O. Cavalry and (b) 25th Cavalry F.F. amalgamated in 1921 and received the present designation in 1922.

22nd Sam Browne's Cavalry raised at Lahore in 1849 by Lieut. S.J. Browne as the 2nd regiment of Punjab Cavalry. Saw service in Delhi and Afghanistan 1878-1880.

25th Cavalry raised at Mooltan in 1849 by Capt. R. Fitzgerald, Bombay Army, as the 5th regiment of Punjab Cavalry. Saw service at Delhi, Afghanistan 1878-80.

*31st Duke of Connaught's Own Lancers* amalgamated with 32nd Lancers and received the present designation in 1903.

31st D. C. O. L. raised at Beerah in 1817 by Lieut.-Col. R. Barclay, the first of the two existing troops forming the nucleus and was originally designated the 1st regiment of Bombay Light Cavalry. Saw service at Delhi, Afghanistan, Punjab and Burma 1885-87.

32nd Lancers raised at Baroda in 1817, the second of two existing troops forming the nucleus and was originally designated the 2nd regiment of Bombay Light Cavalry. Saw service in Central India and Afghanistan, 1879-1880.

*14th Prince of Wales Own Scinde Horse* comprising 35th Scinde Horse and (b) 36th Jacob's Horse amalgamated in 1921 and received the present designation in 1922.

35th Scinde Horse raised at Hyderabad in 1839 by Capt. Ward as the Scinde Irregular Horse. Granted an Honorary standard for service in Scinde bearing the device of a Native Horseman with Lance.

Also carries a standard surmounted by an open hand captured at Meeane. Saw service at Meeane, Hyderabad, Central India, and Afghanistan. 36th Jacob's Horse raised at Hyderabad in 1846 by Capt. J. Jacob and was granted an Honorary standard for service in Scinde in 1843 bearing the device of a Native Horseman with Lance. Saw service in Punjab, Afghanistan, 1878-1880, at Meeane, Hyderabad, etc.

*15th Lancers comprising (a) 17th Cavalry and (b) 37th Lancers (Baluch Horse).*

37th Lancers Baluch Horse raised at Shikarpur in 1885 by Maj. A. L. MacNair.

*17th Queen Victoria's Own Poona Horse comprising (a) 33rd Q.V.O.L.C. and (b) 34th P.A.V.O.P.H. amalgamated in 1921 and received the present designation in 1922.*

33rd Q.V.O.L. Cavalry raised at Sirur in 1820 by Maj. P. Delamotte. Saw service in Afghanistan and China.

34th P.A.V.O.P. Horse raised in 1870 as the Auxiliary Horse. Carries a standard surmounted by silver hand and bearing a Persian inscription (captured at the battle). Saw service in Afghanistan and Persia.

*18th King Edward's Own Cavalry comprising (a) 6th K.E. O.C. and (b) 7th Haryana Lancers, amalgamated in 1921 and received the present designation in 1922.*

6th K.E.O. C. raised at Fategarh in 1842 by Lieut. W.H. Ryves. Saw service in Punjab and Egypt.

*19th King George's Own Lancers comprising (a) 18th K.G. O.L. and (b) 19th Lancers (Fane's Horse) amalgamated in 1921 and received the present designation in 1922.*

18th K.G.O.L. raised at Gwalior in 1858 by Capt. F.H. Smith. Saw service in Afghanistan, Tirah and Punjab Frontier.

19th Lancers raised at Cawnpur in 1860 by Lieut. Fane in a great measure from volunteers from Hudson's Horse, and was originally designated Fane's Horse. Saw service at Taku Forts and Afghanistan.

*20th Lancers comprising 14th Murray's Jat Lancers and 15th Lancers (Cureton's Multanees). Amalgamated in 1921 and received the present designation in 1922.*



14th Murray's Jat Lancers raised at Aligarh in 1857 by Capt. J. I. Murray as Jat Horse Yeomanry. Saw service in Afghanistan.

15th Lancers formed at Lahore in 1858 by Capt. Cureton from six risallahs of Multanee Pathans raised in 1857 by Gulam Husein Khan and was originally designated the Multanee Regiment of Cavalry. Saw service in Afghanistan.

21st King George's Own Central India Horse. This is the late 38th K.G.O.C.I.H. raised in 1858 by Capt. H.O. Mayne on a nucleus of the faithful remains of the Cavalry of the Gwalior, Bhopal and Malwa contingents and originally styled Mayne's Horse. This was amalgamated with the 39th K.G.O.I.H. in 1921 and received the present designation in 1922. Saw service in Afghanistan and Punjab Frontier.

42nd Deolali Regiment. This regiment was formed to put down the rebels that were left at the time of the Indian Mutiny, and was disbanded soon after when the work was over.

### **Cavalry in Indian Native States.**

Aliwal Lancers.

Jodhpur Sada Risallah.

Bikaner Ganga Risallah.

Mysore Transport Corps.

Mysore Lancers.

Bhuratpore Infantry Officer.

Patialla Rajendra Lancers.

Kashmere Mountain Battery.

Indore Transport Corps.

Bhawalpore Mounted Rifles and Camel Troopers.

Jaipur Transport Corps.

Rampur Lancers.

1st Hyderabad Lancers.

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### **SPECIMENS OF FISHING NETS USED IN BOMBAY PRESIDENCY.**

CASE No. 20.

The Bombay Fishing Industry is chiefly marine and may be classed as (1) Tidal and coast fishery, (2) Deep Sea Fishery.

The Deep Sea Fishery is conducted at some distance from the shore by boats capable of keeping to the sea for two or more days at a time, or in close proximity to the shore.

Owing to the sea coast of Western India being deeply indented by creeks, the paths which the fish are likely to take in passing up the tides, are known. These fish tracks, as they are called, are barred by rows of stakes planted apart firmly in the sand and mud, at a distance from thirty to eighty feet, the tops of the stakes protruding above the water even at high tide.

The longer stakes are made of Palmyra or Cocoanut Palm; for the shorter ones some sort of jungle wood is used. They vary from about 40 to 100 feet in length and are towed out to sea by two or three boats. The lower end of the stake is sharpened and made heavier by means of a weight attached. The upper end of the stake rises out of water and the stake assumes a perpendicular position. The stake commences to descend by its own weight, and as soon as it reaches the mud, a rope which has been passed through a hole at the bottom is withdrawn, and two boats containing a load of heavy stones, are lashed, one on each side. This is done at high tide, so that when the tide falls, the weight of the two boats forces the stake into the mud. At low water, the lashes are relaxed, and the operation is repeated again, when the tide is at flood. By this simple device, the long poles are firmly fixed in the mud. Between these stakes, the nets are set in the form of a truncated cone, into which the fish are driven by the force of the tide as it flows up the channel. The nets chiefly used by Bombay Kolis are :—

**STAKE NETS.**—The DHOL used in deep water is a conical net and is very long. The meshes vary from one to two square inches in size, while near the bottom of the pocket, they are as small as one-fourth of an inch.

The BHUSE is used for bottom fish.

The BHOGSE is used for bottom fish.

**DRIFT NET.**—The JAL is used in deep sea.

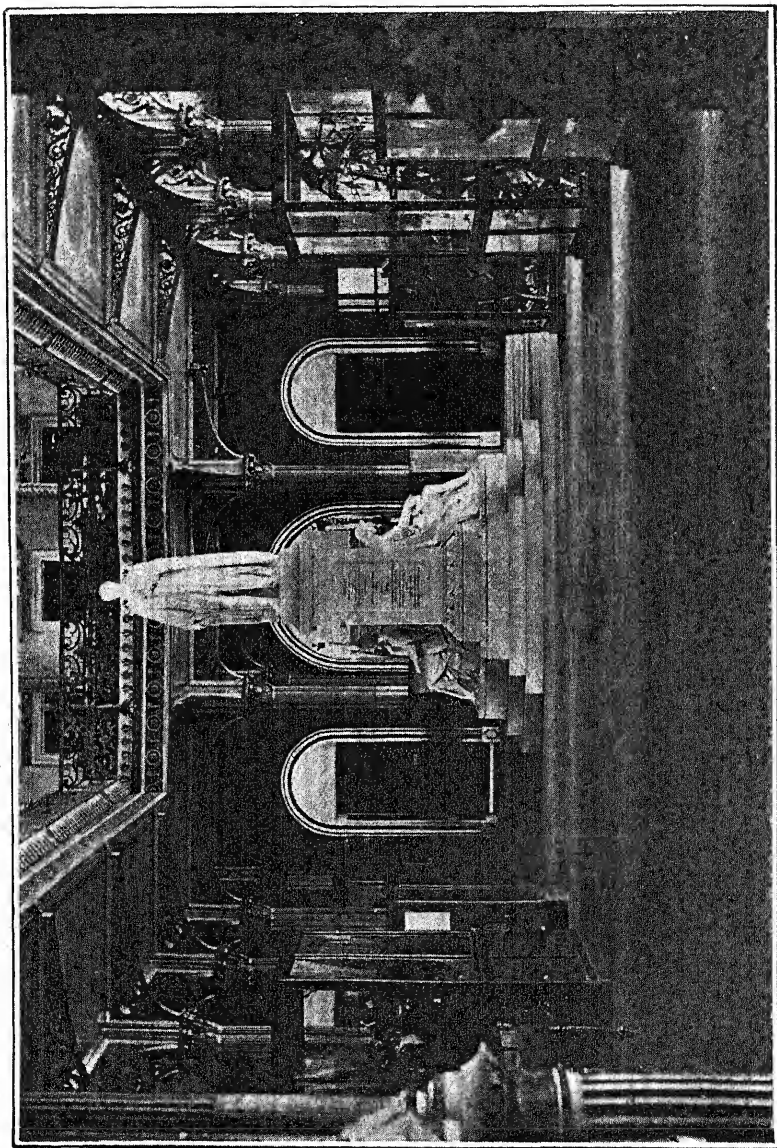
**WALL NETS.**—The VAGHUR is used in deep sea.

The VAVRA is used in creeks and rivers.

**CASTING NETS.**—The FAG furnished with sinkers is used in deep sea.

The PAGAR is used in creeks.





Collections in the Central Hall in the year 1910.

SCOOP NETS.—The AKHU is fixed in tidal or innundated gaps.

The PAGOLI is used in shallow water.

The GARA is used in shallow water.

SHOVE NETS.—The GOLVA and the YERI are used in shallow water.

HOOKS AND LINES such as the GAL, are little used.

LONG LINES.—The KHANDA with many hooks is known but is rarely used.

Implements and materials for preparing nets :—

- (a) Twine twisted with chatkuli.
- (b) Zendu—an instrument for twisting hemp.
- (c) Chatkuli—an instrument for spinning hemp.
- (d) Bobbin for weaving nets.
- (e) Photographs showing the different ways how nets are used and processes in Fishing Industry.
  - (1) Photograph showing how fish is dried on bamboo structures called Volandi. How large nets are carried. How nets are spread out in the sun to dry.
  - (2) Photograph showing how nets are prepared. The fisherman in the background is fishing with the net "phag."
  - (3) Fisherwomen selling fish.
  - (4) Fishermen's village at Danda.
  - (5) Photograph showing how the net "Jal" is used.
  - (6) Photograph showing how the nets "Dhol" and "Yeri" are used.

HOW NETS ARE MADE.—The nets used are all prepared by the fishermen themselves. The men, when not engaged at sea, employ their spare time in spinning and twisting the requisite thread. This is made from hemp fibre (*san*). The fibre is spun by means of a Chatkuli and is twisted into thread of the required strength by means of a Zendu, which serves for a hook. The thread is then gathered on a bobbin called Tarsi, and with a small flat bamboo plate, the required net is woven. Before use the nets are washed and steeped into a solution made of the bark of the Ain tree to preserve them against the corroding effect of salt water.

**INDUSTRIAL SECTION.**

CASE No. 21.

**Specimens of Bell-Metal.**

Bell-Metal is an alloy composed of seven parts of copper and 2 of tin. On account of its bright colour, and the polish that it readily takes, this metal is much in demand for ornamental purposes. The specimens in the case, are manufactured at Trichur, in the Cochin State of South India.

1. Water pot with lid.
2. Water pot.
3. Ornamental Flower Vase.
4. Khuja.
5. Milk pot.
6. Round open pot.
7. Spittoon.
8. Sugar pot.
9. Drinking Cup.
10. Ringed ornamental Flower Vase.
11. Ornamental Flower Vase.
12. Paper weight Horse-shoe shaped.
13. Drinking Cup (Tumbler).
14. Do.
15. Pot for preserves.
16. Ornamental Dish.
17. Mango-shaped Box.
18. Four Pairs of Tea-spoons.
19. One pair of Scissors.
20. Ornamental Cup and Saucer.
21. Pot for Preserves.
22. Samai or Lamp.
23. Water vessel with a spout.
24. Ornamental Plate.
25. Ornamental Tea-Kettle.
26. Lamp with a shade.
27. One Cup and Saucer.
28. Drinking Vessel.
29. Milk Jug with cover.
30. Electroplated Flower Vase.



31. Ornamental Cup.
32. Milk Jug.
33. Cup.
34. Cup and Saucer.
35. Lamp with a shade.
36. Round Dish.

### **SPECIMENS OF COPPER AND BRASSWARE.**

On account of their cheapness in cost and higher melting point, copper and brass are largely employed in the manufacture of domestic articles.

Formerly copper and brass vessels were made from slabs of metals, which were beaten out into rough sheets and then hammered into shape of the required vessel. But this method has now been superseded by the import of rolled sheets from Europe. These vary in thickness and are used according to the size of the vessel required.

**WORKMEN.**—There are five sets of workmen usually employed in making the ordinary utensils for daily use in copper and brass, (1) The Tambats—Coppersmiths—who shape the articles (2) Kalaikars, who tin them, (3) Otaris, casters, (4) Charkwallas worker on the lathe or polishers, (5) Nakshiwallas, Pattern workers. These workmen confine themselves to their respective work.

**THE OPERATION OF WORKING.**—The sheet of copper or brass is placed on the ground and on it is traced with a pair of compasses a circle of the size of the required vessel, and the sheet is cut accordingly. If the article is small, it is hammered into shape from one piece of metal beginning from the bottom, and working up to the mouth; if it is a large one, it is made of two pieces joined at about the centre. In this case, the workmen having cut out the two circular plates of the metal takes first one of them and hammers it into a hollow shape on a piece of stone or wood, heating the metal for the purpose of annealing. This is then hammered on an upright round headed bar of iron struck in the ground, and then on the bent iron bar anvil till the required shape is obtained. The other piece of the metal is then similarly treated, and the two pieces of the metal are soldered together.

When the soldering is complete, the vessel is again hammered on the bent bar anvil and is brought to the required form. It is then polished by rough scrubbing with a mixture of charcoal and tamarind pulp, followed by hammering with a small hammer, until the whole surface is covered over with a series of facets.

**TOOLS USED.**—The tools employed are variously shaped hammers, anvils, and punches. If greater finish is required, the article is put on the lathe and polished. The lathe (*see Model*) is primitive in point of construction. The vessel to be polished is fixed to the lathe with resin and the wheel is turned by a man, while the polisher sits on the ground close to the vessel, and presses a sharp bent tool resting on a small iron guide bar against it as it revolves.

**CASTING.**—The smaller vessels and articles required for religious purposes are generally cast, and for this, the waste from the copper and brass sheets is used. The moulds for casting are made of the ordinary red earth mixed with castor oil. These are finished with the chisel, file, and put on the lathe.

**ARTISTIC WARE.**—For the purpose of artistic samples, the ornament is either executed in an incised line or in embossed work. The first is usually applied to all cast ware, and the pattern is simply incised into the metal with a chisel headed punch and hammer. This kind of work is called Chirella Work, and the lotas, chains, lamps, hookas, etc., are ornamented in this way. When embossed work is required, the vessel is filled with melted pitch or with a mixture made of resin, pounded brick and linseed oil. The vessel is then allowed to stand until the mixture has cooled and hardened, so that it forms a hard core. The surface of the vessel is then covered with clay water and paste, or thin paper is pasted over it. When dry, the design is drawn with pencil outline, which is then cut with a chisel headed punch into the surface of the metal. The paper or clay is then removed by washing. With a series of small punches of different sizes and shapes and a small hammer, the workmen proceeds to develop the design by driving in the back ground by gentle taps. This is repeated until the pattern shows in relief, when the vessel is again annealed in the fire. When the ornament is finished, the vessel is cleaned and polished with tamarind pulp and fine sand. In the Bombay Presidency the chief centres of Copper and Brass Ware manufacture are Nasik and Poona, although a consider-

able quantity is also made at Ahmedabad. In most of the other towns of the Presidency, the manufacture is confined to the local requirements.

## **SPECIMENS OF COPPER AND BRASSWARE.**

### **CASE No. 22.**

#### **Specimens of Indian Lamps and Incense Burners.**

- 1 Lamp stand.
- 2 Samai from Nasick—standing oil lamp.
- 3 Lamandiva—Hanging lamp. This lamp is considered auspicious and is used on all festive occasions.
- 4 Pair of human figures holding lamps for wicks fed with ghee or oil.
- 5 Pancharti from Karwar.
- 6 Pancharti from Nasick.
- 7 Hand-lamp called Kaipanchi from Goa.
- 8 Hand-lamp called Kaipanchi from Goa.
- 9 Hand-lamp called Kaipanchi from Karwar.
- 10 Pair of Niranjans (big) for holding wicks fed with ghee or oil.
- 11 Pair of Niranjans (small) from Nasick.
- 12 Pancharti from Nasick.
- 13 Copper Arti for burning camphor.
- 14 Brass Arti for burning camphor.
- 15 Figure of a lady holding an incense burner.
- 16 Pair of Incense burners from Poona.
- 17 Deer holding an incense burner from Poona.

#### **Specimens of carved and perforated work.**

- 1 Carved dish (brass) from Nasick.
- 2 Carved dish (brass) from Nasick.
- 3 Ink-stand.
- 4 Carved figure of a lady on a copper sheet.
- 5 Carved specimen of Book-inscription.
- 6 Perforated bowl of copper.
- 7 Carved bowl (brass) with an inscription in Arabic characters.
- 8 Carved round box (brass).
- 9 Carved tray (brass) from Nasick.

### Embossed work.

- 1 Embossed dish (copper).
- 2 Embossed round dish from Travancore.
- 3 Embossed vase showing a stage in the process of manufacture.
- 4 Embossed vase showing a stage in the process of manufacture.
- 5 Embossed bowl (brass).
- 6 Embossed Jar (Ganga-jamni).

This is called Ganga-Jamni, made into two sections, one of brass and the other of copper, which are soldered together and named Ganga-Jamni from its having been compared to the confluence of the Ganges and Jamna at Allahabad, where the whitish colour of the former runs side by side with the dark-coloured water of the latter producing before they intermingle a phenomenon much admired and revered by the Indians.

- 7 Embossed bowl.
- 8 Embossed bowl.
- 9 Embossed round dish (copper) from Nasik.

### Specimens of Images.

- 1 Idol of Khandoba from Poona.
- 2 Idol of Bali Raja from Poona.
- 3 Idol of Vithoba and Rukhmai from Poona.
- 4 Idol of Vishnu.
- 5 Idol of Khandoba and Mhalasa from Poona.
- 6 Idol of Rama and Sita from Poona.
- 7 Idol of Radha and Krishna from Poona.
- 8 Idol of Annapurna from Poona.
- 9 Idol of Shankar and Parvati from Poona.
- 10 Idol of Durga from Poona.
- 11 Idol of Mahishasurmardani from Poona.
- 12 Idol of Bal-Krishna on a Chowrang from Poona.
- 13 Image of a Dwarpal (door-keeper) from Nepal.
- 14 Idol of Dattatraya from Cashmere.
- 15 Idol of Buddha (embossed) from Nepal set with turquoises.
- 16 Image of a Brahmin lady holding an Indian Lotus.

### Miscellaneous Cast work.

- 1 Abhiseka-Patra. Used for washing images at the time of worship from Nasick.

- 2 Sacrificial knife from Mysore used by the Saktas.
- 3 Kalamdan.
- 4 Abhiseka-stand on a Nandi (Bull).
- 5 Abhiseka-Patra.
- 6 Box for keeping ornaments.
- 7 Box for keeping ornaments.
- 8 Pan-dan.
- 9 Pan-dan almond shaped.
- 10 Kamal-stand.
- 11 Sampustha.
- 12 Tea-kettle from Bhavnagar
- 13 Tambya, Ganga-Jamni.
- 14 Lota, circular melon-shaped vessel flattened from the top and having an elegant reflexed ring by which it is carried suspended between the fingers and the thumb.
- 15 Tambya Velacha from Nasick so called from having a fillet at the top and bottom.
- 16 Tambya from Sangli.
- 17 Tambya (brass) from Poona.
- 18 Lota (copper).
- 19 Tambya Ganga-Jamni.
- 20 Phulpatra Pot for drinking water named from its resemblance to the corolla of a flower.
- 21 Gadva (Ganga-Jamni) with a spout.
- 22 Phulpatra.
- 23 Chamboo.
- 24 Gadva.
- 25 Tambya from Sangli.
- 26 Tambya from Sangli.

### **Bidree work.**

- 1 Pair of Hookas.

Bidri work comes under the broader division of Industrial Arts, known as Damascened or Encrusted ware. It derived its name from an industry which was practised at Bidar in the territory of the Nizam. This sort of work is particularly used for hukka bottoms and dishes to hand betel nuts round to visitors. It is of a black colour, which never fades; but if tarnished, can be restored. To relieve the sable hue it is always inlaid

with silver. The alloy used in the making was found to contain tin and copper in the proportion of 24 to 1. The proportion in the alloy varies in different places. The desired vessel is first moulded, then reduced to exact shape on the turning lathe. It is next engraved or chased in varying depths according to the quality or kind of bidri that is desired to be produced. It is thereafter smoothed, polished, and coloured to a dark green or black colour by means of a paste made of sal amonia and saltpetre moistened in rape seed oil, and thickened with charcoal. The vessel is lightly heated by placing in the sun, then rubbed with the colouring preparation and allowed to cool for several hours. It is thereafter washed and rubbed with a little oil, when the colour is found to be permanent. Bidri does not rust and only breaks by a severe blow, but it is very heavy and clumsy.

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CASE No. 22A.

Model of a Blacksmith's shop.

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**ETHNOLOGICAL SECTION.**

CASE No. 23.

**Games of Indian Boys and Girls and Indoor Games.**

**(a) Games played by Girls.**

The games of Indian girls are mostly indoor and they are either dancing or romping exercises, or playing with shells or Fever nuts, or those played with marked wooden strips which serve the purpose of dice as in Indian Backgammon.

Among the dancing or romping exercises, the Fugadi is the most delectable, and is done in a number of ways. This is generally accompanied by singing, each song being short and so composed that the time is in keeping with the different movements of the body.

- 1 Don Hatachi Fugadi.
- 2 Bas fugadi.
- 3 Dand fugadi.
- 4 Kasav fugadi.
- 5 Zimma.



### **Romping exercises.**

- 1 Nakulya.
- 2 Kombda.
- 3 Udat Kombda.
- 4 Ghoda.
- 5 Bhor-bhendi.
- 6 Hinganbat.
- 7 Gop-Rasa.
- 8 Atak-matak.
- 9 Kanolya.
- 10 Amba.

### **Games played with shells or Fever nuts.**

- 1 Hatavarcha.
- 2 Hatavarche kachke.
- 3 Sheela.
- 4 Ukhal.

### **Games played like Backgammon.**

- 1 Tabulfol.

### **(B) Games of Indian Boys.**

- 1 Atya-patya.

This is one of the most played of the outdoor games in the country confined to all classes of people. The game consists in having a square measuring about 7 feet of four lines with two lines running through the centre of the square and touching its sides into halves. This gives three parallel lines facing the invaders, and three parallel lines at right angles to them. The first three lines are each in the charge of a boy, this set of three boys forming the party in possession. The attacking party also consists of three boys, whose object is to get through the square. The defenders are confined to their own lines, and also under certain restrictions on the cross lines, if necessary to present the attacking party from getting through. As there are an equal number on both sides, the game eventually resolves itself into a series of single contests in speed. The defenders are confined to their own lines, but the attackers may make any feints they choose, and on account of these feints and tricks a number of openings arise, which requires some organisation on the part of both the attacking and defending sides. As the front lines are captured, a more and more furious and organised struggle rages at the back lines, where the captain's post of honour and of danger is located. In this case we have supposed three lines and three players a side, but the number of players may be indefinitely increased.

## 2 Iti-dandoo.

This game is played mostly by young boys. It is played by means of a Iti, a small wooden stick measuring about four inches and tapering at both ends, and a Dandu,—a wooden stick measuring about a foot and rather flattened at one end. To begin with, a small hole is made in the ground called Gully, and over it, is placed the Iti. This is then struck by the Dandu placed against it from behind. The distance from the pit (Gully) to the place where the Iti lands is now measured by the Dandu, the following words being used : Vakāt, Lend, Mund, Nar, Aaar, Vaid and Zakoo, meaning one, two, three etc., words taken from one of the Telegu languages, showing that the game had been adopted from the country of the Teleganas.

## 3 Palkhi.

## 4 Patang.

## 5 Khur-ghodee.

## 6 Atak-matak champa.

## 7 Bhowra.

## 8 Ghan-makad.

## 9 Shelya vagh.

## 10 Vagh-bakry.

## 11 Chor-shipayee.

## 12 Ekal-kagya.

**Chaturyamak games. (Intellectual amusements.)**

## 1 Chess (Buddhibal).

This is a very old game in India and is in much favour with the higher and educated classes. It is played by means of a chess board divided into 64 chequered squares and pieces called chessmen.

## 2 Dasavatari Gangifa or Playing cards.

This game is named after the ten Avatars or incarnations of the God Vishnu. There are 120 cards in the pack, and is played by three men at a time. The cards are coloured in red, yellow, green, brown, and black, one colour is being used for two avatars. The game is difficult to play and hence it is more confined to higher or educated classes.

## 3 Songtyas.

The game of Songtyas or Chowpat (Indian Backgammon) is a very ancient Hindustani game. There are 16 pieces of one form called Songtyas of four different colours, and they all move in the same direction. Four people sit down together at this game, either as adversaries or as partners. The dice

used are either two or three. The table is composed of two parallelograms intersecting each other at right angles, and each of the four sides of this cross is divided into 24 equal parts, a square space being left in the centre of the whole. The play begins with the throw of the dice and the pieces are moved to the right and proceed all around the table on the out-line till they come to the middle line again. When the pieces are brought round to the 5th or 7th square of the middle line, it is called a sure game, and from that situation he must throw the number that will carry his pieces into the space in the centre, which concludes the game.

## ETHNOLOGICAL SECTION.

CASE No. 24.

### Indian Musical Instruments.

Our knowledge of Indian Music is derived from a two fold source, legend and history.

In the ancient Hindu Literature all knowledge is traced to its source in the Vedas, among which the Sama Veda, was intended to be sung. From this is derived the Up-Veda of the Musicians called the Gandharva Veda. The art of singing is said to have been communicated to man by Brahma and his mythological son Narad.

Turning to history, we find that Indian Music was highly cultivated as an art in earliest times, the Hymns of Yajur and the Rig Vedas were set and sung to Music. It is known that Musicians were held in great esteem, and there is every reason to suppose that their practice reached a high standard of accomplishment, but during the subsequent revolutions the country suffered under, the systems they worked upon disappeared, and although books written in Sanskrit on Music have preserved the theory of their musical compositions, its practice has died out. The writings of Bharata, who lived about the 5th century of the Christian era, the reputed author of Nataka and a Musical System "Natyashastra"; of Jayadeva the author of 'Gita Govind, who lived about 1100 A. D.; of Sarangadev the author of Sangit Ramakara who lived about 1200 A. D.; of Kallinath the author of Sangit Ratnakar Tika, who lived about 1460 A. D. gave fresh start to the study of the subject, and the occasional

patronage it received from time to time, notably in the reign of Emperor Akbar, who is reported to have loved music so much that he invited Myan Tan Sen, the pupil of Haridas Swami from the Court of the Raja of Bagalkhand helped to preserve both the theory and practice from total extinction. Finally the composition of Sangit Parijataka by Pandit Ahobala in the 18th century created two separate schools, namely, the Hindustani and the Karnatic, the present exponent of the latter being the famous Tanjore School in South India.

The oldest forms of Hindu songs are the Pada and Bhajana. The Pada is generally some pithy saying taken from Sanscrit verse and enlarged upon. The Bhajan is similar to the Bengali Kirtan, in which a long story of a dramatic nature is told by a leader, the congregation acting as a chorus. Another old form is the Katha or Kirtan (sermon in song) in which a text from the Epics is intoned and then expounded.

The typical form of Hindu song, which has been evolved from the Pada and Bhajana, and which is untouched by Muhamadan influence, is the Dhrupada. It has a free masculine character and is sometimes religious. It is slow in time and in selected metres.

The Khyal, a later form of Dhrupada, is supposed to have been composed by Muhamad Sharqui of Jaunpur (1401-1440). It is a song (cheza) or an instrumental piece (gitz) constructed of variations on a short phrase. Its highest development belongs to the Muhammadan period. It is generally a love tale and is supposed to be sung by a woman. It is a typical pathetic form of song.

The three other forms are the Sarigama, the Tarana, and the Thumri. The Thumri or love song is of Hindu origin and is chiefly composed in the Vraj Bhasa. Vraj is the district round Agra and Mathura the scene of Krishna's juvenile sports. The music is lively and adapted to pantomime and dancing. The subjects of the Thumri are (1) chiefly connected with the visits of lovers, (2) expressions of sorrow on account of their absence.

There are also other songs of local fame, *e.g.* Abhangas of Namdev and Tukaram, the Ovis of Mukteshwar and Eknath, the Lavnees or Love Songs, the Sakees, the Dindees and the

Powadas or the historical ballads of the wandering bards of Maharastra.

The typical Muhammadan song is the Tappa. It is written exclusively in Hindustani and Punjabi. This form of composition was brought to perfection by a songstress named Shori who lived about 1700 A. D. The other Muhammadan songs are the Ghazal, the woeful ballad of a lover and the Dadfa confined almost to lower classes.

*Books consulted* :—Ballads of the Marathas by H. A. Acworth, Esq., I.C.S.

Music of Hindustan by Mr. M. F. Stringways.  
Volume 3 of Asiatic Researches.

Music in some stage of development seems to be common to every people, and even the most barbarous people possess some kinds of musical instruments. Music has always been a favourite art with the Hindus, and mention is made of their musical instruments in old Sanscrit books, *e.g.* "with the drum of the Vedas, are mentioned the flute, popularly associated with Krishna." Representations are seen in old paintings like those at Ajanta, and in sculptures on ancient temples, and on Buddhist stupas, such as at Amaravati and Sanchi. In the following books written in Pali, the Milanda Panha, a little after the Christian era and in the Mahaparambhana Sutta written about 400 B. C. and later on in the Jatakas, mention is also made of such instruments, as the Vina, shell trumpet, flute, Nagara, Mridang, horns, etc. Much ingenuity has been devoted to the invention of these instruments, and they possess a peculiar interest to the present day in as much as some have remained unaltered for centuries. Beginning with the simpler forms belonging to the rude hill tribes, and proceeding onwards to those in use among the more civilised population of villages and cities, we find a most interesting variety.

Since the time of the Muhammadan Invasion, some Arabian and Persian Instruments have been introduced, and have become almost naturalised, but their use has never been universal, and is mostly confined to Northern India among the Muhammadan musicians.

In their construction, the natives of India have called into use a great variety of substances. The chief of these are reeds,

bamboo, gourds, wood, iron, brass, shells, bone, ivory, gut, bladder and skin.

It is rather difficult to frame a classification of the instruments, which will indicate their position in the probable order of their successive inventions, but the following classification made after Bharata (circum 500 A.D.), who is supposed to be the first writer of Hindu Dramatic composition. (1) TATA YANTRA, comprising all stringed instruments; these include (a) Instruments with one string and without a finger board. (b) Instruments with finger board and frets for shortening the strings, the sound being produced by twanging with the finger or with a piece of wood or bone. (c) Instruments with finger board and played with a bow.

### **The Tuntune.**

The Tuntune has only one string and no frets. It is made from a piece of bamboo to the underside of which, a large hollow cylinder of wood is attached, one end being closed by parchment. In the centre of the parchment, there is a hole through which the string is passed and tied in a knot. It is used chiefly by mendicants belonging to the Sacta Sect and Ballad singers, and is very popular in the Deccan and the Central Provinces.

### **The Ektara.**

The Ektara has only one string and no frets. It is made from a piece of bamboo, to which is attached a large gourd. The string passes over the bamboo and is attached to the bottom of the gourd. It is mostly used by mendicants, and is very popular in the Southern Maratha Country. Under class (b).

### **The Been.**

The Been is a fretted instrument. There are two gourd resonators. Its average length is about 3 feet. One of the gourds is fixed near the top and the other near the bottom. These are usually very large, and each has a round plate cut out at the bottom to act as a sound hole. The frets are placed on the finger board, and number twenty-two. There are seven strings, four of which pass over frets, the remaining being side strings, two on the left and one on the right side. The strings,



on the left side and the two highest on the finger board, are usually of steel. the rest being of brass or silver. The Instrument is held over the left shoulder (*see model*), the upper gourd resting upon it, and the lower gourd on the knees. The frets are stopped with the left hand, the little finger of which is used occasionally to strike the side strings on the left side. The strokes are made by the right hand, the first two fingers being armed with iron plectra, which have the effect of rapidly re-iterating the notes when passed backward and forward across the strings.

### **The Sitar.**

The Sitar is the commonest of all the stringed instruments. The frets used are generally of brass and are between 16 and 18 in number, are elliptical in form and are secured to the finger board by pieces of gut passing underneath. The body of the Sitar is usually made of gourd, with a belly of thin wood pierced with certain number of sound holes, fixed upon it. The strings are seven in number, and the instrument is played by means of a wire plectrum put upon the fore-finger (*see model*), the thumb being placed firmly upon the edge of the belly, so that the position of the right hand shall change as little as possible. The invention of this instrument is ascribed to Amir Kushru of Delhi, who lived about the 12th century. of the Christian era.

### **The Rabob.**

The Rabob found in all the Muhammadan countries is made of wood with a belly of parchment. There are four strings, three of gut and one of brass. Sympathetic strings are attached at sides. It is played with a wooden plectrum.

### **The Tambura.**

The Tambura is used as a common accompaniment to singing, the strings are never stopped, but are always struck upon by the fingers. There are 4 strings, three of which are of brass and the 4th of steel. It has no side strings. The bridge is moveable, and is made either of wood or ivory. The tone is slightly buzzing, and to procure this result pieces of silk are placed between the bridge and the strings and manipulated until the desired effect is produced. There are also beads

threaded upon the strings between the bridge and the attachment to which the strings are secured. The beads pushed down in the direction of the attachment act like a wedge and serve to alter the pitch as desired. When played, the Tambura is always held upright (*see model*), the body resting on the ground.

### **The Shruti-Vina.**

The Shruti-Vina also called Rudra Vina, is somewhat similar to the above, but its use is restricted to professional musicians or skilled performers. It has five strings.

### **The Swarmandala.**

The Swarmandala is an instrument seldom met with and is to be seen mostly in the hands of professional musicians. There are usually 21 strings, of brass and steel. It is played with a wire plectrum, worn upon the fore finger. The performer holds in his left hand an iron ring somewhat like a quoit (*see model*), which he applies to the strings. The tuning pins are turned by means of an iron key and the tension of these string is usually very high.  
Under class (c).

### **The Sarangi.**

The Sarangi is usually strung with three strings passing over the bridge, and below these, 13 sympathetic wire strings are arranged somewhat like the strings of a harp. It is played on with a bow made of hair stretched on a cane. It is chiefly used in theatrical performances and by nautch companies. The instrument is made from a block of wood hollowed out covered with parchment. When in use, it is held vertically (*see model*).

### **The Taus.**

The Taus is merely a form of the Sitar with moveable frets. It is used by many of the nautch musicians. It is usually shaped like a pea-cock, and is played with a bow.

### **The Sarinda.**

The Sarinda is played with a bow and is mostly used by the Muhammadans. It is very popular with the lower classes of people.

### The Kingadi.

The Kingadi also called Kinnari or Kokha in Southern India is a rude stringed instrument used mostly by country people and Khanphate Bairagees, one of the Shivite orders of the Indian Mendicants. It is formed of a piece of bamboo with a resonator made usually of the cocoanut shell. It has two strings and is played with a bow to which are usually attached small bells.

### The Dilruba.

(2) SHUSHIRA YANTRA comprising instruments of percussion, not covered with skin, *e.g.*, Gongs, Cymbals and Bells, etc.

### The Kurtar.

The Kurtar (*Pair of Chiplyas*) are two pieces of hard wood. These are held in hand and the flat surfaces struck together. These are used in religious temples at the time of worship, and when recitations of Bhajans are held.

The most interesting and important instrument of this class is Jaltaranga consisting of a number of small cups of metal or porcelain tuned to a particular scale by means of pouring in more or less water. It is played with two thick sticks covered with felt or tipped with cork (*see model*).

(3) GHANA YANTRA, comprising all instruments covered with skins including all kinds of drums.

### Mridang.

The Mridang considered to be the most ancient of the Indian Drums, is commonly employed as an accompaniment to songs and instrumental performances. It consists of a hollow shell of wood larger at one end than the other, and upon which are stretched two heads of skin, fastened to wooden hoops and strained by leather braces interlaced and passing the length of the Mridang. Small wooden pieces placed between the shell and the braces, serve to tune the instrument. The centre of the smaller head is coated with a composition composed of resin, oil, wax and iron filings. The Mridang is beaten by the hands, the smaller head of the instrument being struck by the right hand, the larger by the left.

### **Tabla and Baya.**

In the Deccan and further north, preference appears to be given to the Tabla and Baya, which are small copper kettle drums always played together, like the two heads of the Mridang. These are tuned by means of braces and a resinous composition.

### **The Dhol.**

The Dhol is a kind of drum played with hands or stick.

### **The Dumru.**

The Dumru is a small drum shaped like an hour glass, the sound being produced by the strokes of a knotted string attached to it. The performer shakes the drum and the knotted string strikes one or other of the skin covered heads mostly used by snake charmers, and is always associated with the worship of Shiva.

### **The Dugdugion.**

The Dugdugion is a bigger sized dumru, and is played with a stick. It is used by Vaghrees and other wandering tribes of Gujrat. It is also used by exorcists.

### **The Nagara.**

The Nagara (*see model*) is a large kettle drum. The shell is made of copper, brass, or sheet iron rivetted together. The reed is covered with skin which is strained upon hoops of metal and stretched by ropes or leather thongs, passing beneath the underside of the drum. It is beaten with sticks. In the Ramayan and Mahabharat, it is called Dhundubhi. Large Nagaras are called Nohobat, and these with other smaller drums, Sanais, horns, etc., are often played in specially appointed places at the residence of Hindu and Muhammadan noblemen, in temples and shrines and palaces. The place where these are kept is called Nohobatkhana. To this class also belongs the instrument called 'Tasha' which is beaten with two cane sticks used in marriage processions and on other ceremonial and religious occasions.

(4) ANNUDHA YANTRA comprising wind instruments  
(a) of metal, shell, and (b) reeds.  
Under class (a).

### **The Khanjiri.**

The Khanjiri is a sort of drum, approaching nearly to the European Tambourine. In the wooden hoop are placed slits containing pieces of metal strung together, which clash when the instrument is shaken.

### **The Duff.**

The Duff is a sort of drum, struck with the fingers of the right hand.

### **The Shankha (Conch).**

The Shankha is often beautifully mounted in gold or silver, but generally in brass. It is known to scientists as *Turbinella rapa*, and all that is required to make it sonorous, is to drill a hole through the base and to attach a mouth-piece. When blown into, the wind passing through the different whorls, produces a loud, sharp, piercing sound, which is heard far and wide, and hence its great esteem as a war trumpet. Six kinds of conches are mentioned in the Bhagvadgita as having been used by the warriors at the beginning of the great struggle. Their names are the following: Panchganya, Devadatta, Pundra, Anantavigia, Sugghosa and Manipushapaka, which are thus rendered by Schegel, Gigantea, Thedotes, Arundinea, Triumphantrix, Dulcisonas, and Gemniflorea (*vide* translation of the GITA in the Sacred Books of the East Series by the late Mr. Justice Telang). It is also used in religious services, and also at funerals chiefly by the Lingayets.

### **The Singh or the Indian Trumpet.**

- (1) Horn made of Brass.
- (2) Horn made of Bamboo.

The Singh is used universally throughout India for signals, watch setting processions and the like both by Hindus and Muhammadans. It was also formerly used on the battle fields. Under class (b).

### **The Sanai.**

The Sanai is a reed instrument with a conical bore enlarging downwards. It is pierced with holes, the upper seven of which are used in fingering, the rest being used at the option

of the player to regulate the pitch of the instrument. This is one of the regular outdoor instruments of Indian music and is used on all occasions, in domestic and public religious ceremonies, and processions generally with large drums.

The Samel is somewhat similar to sanai and is used in accompaniment with it.

### **Two Muralees.**

The Murli or Bansri is made of bamboo, and is generally associated with Krishna.

### **Two Pungis.**

The Pungi is a reed pipe used exclusively by snake charmers. The body and mouth-piece are formed from a bottle shaped gourd, into which are inserted two pipes of cane, the interior ends of which are so cut as to form a reed, one of these is presented by Mrs. T. D. M. Burns.

### **The Alguja.**

The Alguja or Powa is a reed instrument made of bamboo and is mostly used in Punjab and Upper India.

Reed instrument used by the Somalis.

Presented by Mr. C. D. Mahalaxmiwalla, late Superintendent of Victoria Gardens.

## **CLAY MODELS SHOWING HOW THE INSTRUMENTS ARE PLAYED UPON.**

1. Horn Blower.
2. Playing Chowgadha.
3. Playing Jaltarang.
4. Playing Swarmandal.
5. Playing Tabla and Dagga.
6. Playing Mridang.
7. Playing Tasha.
8. Playing Tambora.
9. Playing Rabob.
10. Playing Kingadi.
11. Playing Been.
12. Playing Sarangi.



13. Model of a Danka.
14. Playing Tuntune.
15. Playing Ektara.
16. Blowing Conch.

## SPECIMENS OF WOOD-WORK INLAID WITH BONE AND IVORY.

CASE No. 25.

The art of wood carving is carried on in Ahmedabad, Surat, Bombay and Kanara in the Bombay Presidency.

The principal kinds of woods used are, Blackwood, Ebony, Teak and Sandalwood, the last being in great demand from the carvers at Kanara and Surat. The sandalwood grows very largely in Kanara, and it has also been transplanted in other parts of the country, but the result however is unsatisfactory, as the wood obtained is of inferior quality.

The carvers generally like to work on one kind of wood only, for instance the Kanarese carver has a predilection for sandalwood, the Bombay for blackwood and the Gujrat for teak. When specimens of Inlaid work are required, ivory, tin, green bone and red wood are used in combination with these different kinds of woods.

**TOOLS.**—The tools employed are simple, consisting chiefly of chisels without handles and gouges. A piece of wood serves the purpose of a mallet. For perforated work, the common bow drill is used. Whenever a round shape is required, the article is put on the lathe. For cleaning, a piece of dry cocoanut husk cut transversely is used. The wood in the oil gives the required polish.

**PROCESS OF WORK.**—The carver begins by either drawing the pattern to be produced on the smooth piece of wood which has been previously whitened, or on a piece of paper pasted over its surface. This is then engraved or out lined in every detail; the background is next cut away thus leaving the pattern in low relief; and finally the design itself is carved in the minutest detail with chisels of the required fineness.

**INLAID WORK.**—Inlaid work is chiefly done at Ahmedabad, Bombay, Baroda and Surat, where it is locally known as "Sadeli."

Long narrow strips of ivory, horn, (pale or coloured) ebony, red wood, tin, silver are glued together in such a manner as to form a sort of stick which shows on its tranverse section, geometric patterns of varied designs. This stick is then cut through in thin sections and the pieces are glued to the surface of the box or article corresponding to the pattern desired.

*Books consulted* :—Monograph on wood carving in the Bombay Presidency, by A. Wales, Esq., M.A., I.C.S., (2) Indian Art at Delhi in 1903.

1. Inlaid Ink-bottle stand.
2. Inlaid glove box.
3. Inlaid writing desk.
4. Carved sandalwood and inlaid book case.
5. Strips of coloured bone used in inlaying wood-work.
6. Inlaid Toilet box.
7. Inlaid sandalwood toy box.
8. Inlaid envelope case.
9. Inlaid book rack.
10. Carved sandalwood and inlaid envelope case.
11. Perforated inlaid flower basket.
12. Sandalwood inlaid glove box.
13. Do. do.
14. Inlaid glove box.
15. Board containing forty-five samples of different designs of Inlay work.
16. Carved sandalwood and inlaid chess board.
17. Carved sandalwood and inlaid Handkerchief box.
18. Inlaid toilet box.
19. Carved sandalwood and inlaid book cover.
20. Inlaid cash box.
21. Inlaid writing desk.
22. Inlaid chess board.
23. Inlaid card case.
24. Do.
25. Do.
26. Do.
27. Carved sandalwood and inlaid writing desk.
28. Sandalwood inlaid sewing case.
29. Inlaid book case.

30. Inlaid glove box.
31. Paper cutter.
32. Do.
33. Carved sandalwood and inlaid handkerchief box.
34. Paper weight.
35. Do.
36. Inlaid envelope box.
37. Carved sandalwood and inlaid handkerchief box.
38. Inlaid book case.
39. Inlaid glove box.
40. Fox and Geese game.
41. Inlaid glove box.
42. Inlaid handkerchief box.
43. Inlaid sewing case.
44. Inlaid glove box.
45. Inlaid table.

### CARVED WOOD WORK.

CASE No. 26.

1. Casket, South India style of carving.
2. Card case, South India style of carving.
3. Carved panel Karwar style of carving.
4. Book Rack panel Karwar style of carving.
5. Ink-bottle stand, Gujrat style of work.
6. Fan, South India style of carving.
7. Do. do. do.
8. Casket, South India style of carving.
9. Book-stand, Gujarat style of work.
10. Parasole handle, South India style of work.
11. Walking stick, South India style of work.
12. Paper cutter, South India style of work.
13. Glove box, South India style of work.
14. Model of a Civite temple, Gujarat style of work.
15. Fly-flier, South India style of work.
16. Model of Rath, South India style of work.
17. Table, Gujarat style of work.
18. Carved panel, Gersoppa falls, South India style of work.
19. Carved panel " Jungle scenery " South India style of work.
20. " Johali Krsna " from Honavar.

21. "Ram and Sita" from Honavar.
22. Three carved boxes of sandalwood.
23. (a) Toilet box, Burma, style of work.
24. (b) Toilet box, Gujarat style of work.
25. (c) Do. do.
26. Toilet box, Gujarat style of work.
27. Glove box Gujarat style of work.
28. Engraved model of Saraswati.
29. Sandalwood picture frame.
30. Model of Lakshmi.
31. Carved Sandalwood Casket.

### Specimens of Carved Blackwood.

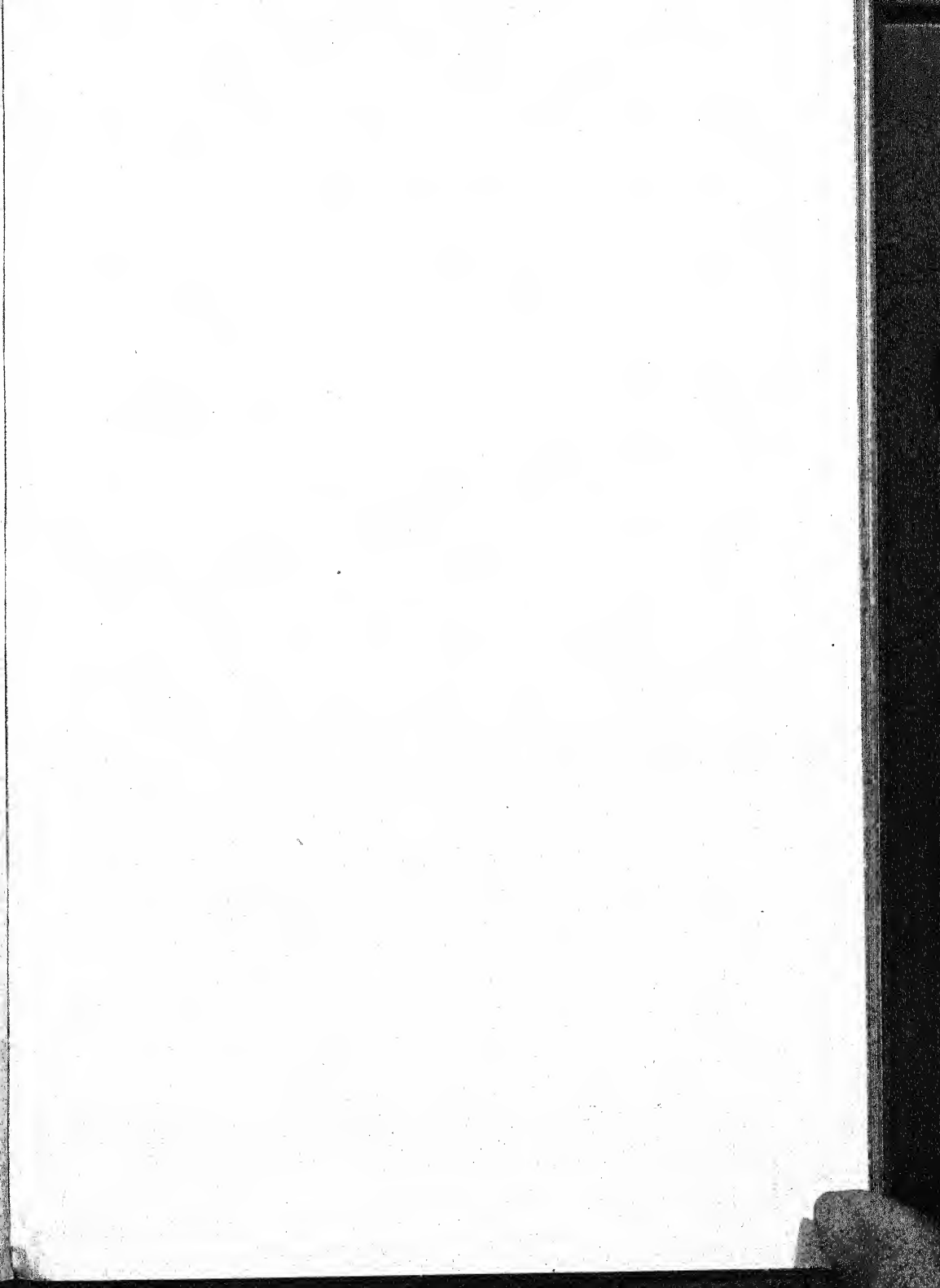
1. Model of a Jain temple, Gujarat style of carving.
2. Wall bracket, Gujarat style of carving.
3. Glove box, Gujarat style of carving.
4. Handkerchief box, Gujarat style of carving.
5. Paper cutter.
6. Flower Gujarat style of carving.
7. Carved screen (presented by the late Sir Mangaldas Nathubhai).
8. Carved walnut wood box from Cashmere.
9. Carved wood box from Cashmere.
10. Carved Elephant in Ebony from South India.

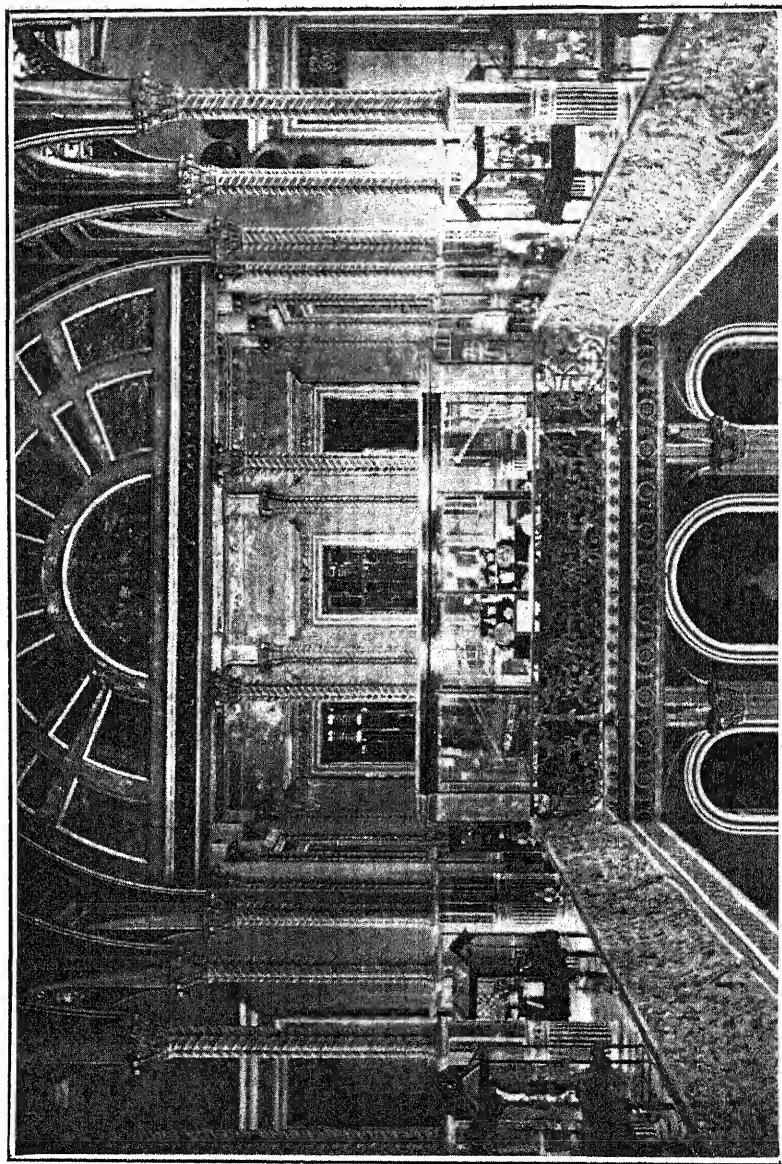
### DREDGERS.

#### CASE No. 27.

Dredging is the name given to the process of excavating materials from the bed of the sea, a creek, river, harbour or canal. It has been practised from very early times in works of marine engineering, and has of late years by means of improved appliances, been brought to a state of high perfection.

The first employment of machinery to effect this object is claimed alike by Holland and Italy, in both of which countries dredging is believed to have been practised before it was introduced into Britain. The earliest appliance used by the Dutch for cleaning their canals was what is called the "Bag and Spoon Dredge." It was simply a ring of iron, about two feet in dia-





Collection in the Northern Wing in the year 1910.



meter, having a bag of strong leather attached by means of thongs. The ring was fixed to a long pole, which, at the time of using, was lowered to the bottom from the side of a barge, and was dragged along the bottom. When the bag was full, it was lifted up and emptied into the barge. Another implement was the dredging bucket placed between two lighters, a process used in the Tay till the year 1833. These primitive appliances have now been superseded by the steam dredger, which was first employed in England about the year 1836. Subsequent improvements have now rendered the steam dredger a powerful machine excavating and raising materials from depths of fifteen to thirty feet of water according to the size of the machinery.

Almost all kinds of materials except solid rock or very large boulders may now be dredged with ease. Loose gravel is probably the best material to work in, but a powerful dredger will readily break up and raise beds of gravel, clay and boulders and even find its way through the surface of a soft rock. Sometimes a rake or a pronged instrument is put up on the bucket frame alternating with the buckets in order to tear up the ground to be dredged.

At present the construction of large steam dredgers has for its main feature a bucket ladder, to which a series of buckets are attached. These cut into the bottom and return to the surface loaded with the excavated material, which is discharged at the top of the ladder into a receptacle provided to receive it when full, the contents of this receptacle are discharged at some site chosen to receive them. Further improvements have resulted in the construction of Hopper dredges, which combine a dredge for raising material and a vessel for conveying it to the place of discharge. Hopper barges are made with hinged bottoms, which can be opened when the place of deposit is reached and the contents are thus easily and quickly discharged.

These models are lent to the Victoria and Albert Museum by the Trustees of the Bombay Port Trust.

1. Dredger "Teredo."
2. Dredger "Kuphus."
3. Barge "Mulloch."
4. Dredger "Pholas."
5. Tug "Princess."

**AGRICULTURAL IMPLEMENTS.****CASE No. 28.**

Agricultural Implements used by Indian cultivators are few and simple in construction and primitive in pattern.

Nos. 1-3. **THE PLOUGH.**—The Plough is the principal implement, and is in many parts of India the only one used for preparing the ground. There are many kinds varying in weight and effectiveness, but the general pattern is the same for all. The part that penetrates the soil, is a wedge shaped block of hard wood, to which is usually attached an iron share. The draught pole projects in front, and it is attached to the neck-yoke of the bullocks, while a short single upright stilt behind, serves as a guiding handle. Where superficial tillage is required, light ploughs are used, but when as in the Deccan, the black soil has to be broken into large clods, ploughs drawn by four or six pairs of oxen are employed.

Nos. 4-5. **THE SCARIFIER.**—The Scarifier is extensively used throughout the Deccan Tract. It is called Guthe. Of this, there are many varieties, from those with a narrow blade to work between rows of crops, to those requiring six or more bullocks to draw them. The blade is fixed by two wooden or iron stays to a horizontal beam, while a draught pole, neck yoke and a stilt to guide it, complete the implement. The Guthe is used during the hot weather as a substitute for the plough and also follows the plough to prepare the seed beds. When at work, the heavy blade serves as a clod crusher and the blade working below the surface raises weeds to the top. If the blade does not go to the required depth, the workman adds his weight to the beam by standing or placing a stone upon it.

**THE SEED DRILL.**—The Seed Drill is used in the same tract as the scarifier. It has a stout wooden head piece like the scarifier and the pole, and the pole yoke and the stilt are fixed exactly in the same manner. Coulters of wood with iron point are set apart in the head piece. A hole is drilled in each coulter into which a bamboo tube is inserted. These tubes, as they rise, incline towards each other and meet about 3 feet from the ground to support the seed bowl. Each tube communicates with a hole in the seed bowl, the bowl and the seed tubes being support-

ed by ropes. The seed is fed by hands in the bowl. Two men are required for this implement, one to guide the oxen and the other to feed the bowl. At work, the coulter cut furrows into which the seed drops before the soil falls back, the covering being completed by a light scarifier.

No. 6. THE BULLOCK-HOE.—Where the space between the drills is wide, bullock hoes constructed in the same manner as the scarifier are worked in pairs drawn by one pair of bullocks, each implement being guided by a man. The blade of each hoe cuts the weeds and stirs the surface soil between the rows of growing crops.

Nos. 7-10. THE HARROWS.—Harrows of which the Dantale is the chief representative, consists of a board bending inward from the lower part of which protude heavy blunt teeth of wood tipped with iron. A simple pole is attached to the yoke or is used as a long shafted hand rake.

No. 11. CLOD CRUSHER.—Levellers and clod crushers are used to smooth the surface before sowing and also to conserve moisture.

Nos. 12-14. KUDALI (PICK).—It is a strong blade of steel about three inches wide at the point, and is fitted to a powerful strong wooden handle three feet long. Such a sort of implement is used in Bombay.

Nos. 15-17. KURAD (AXE).—This is an implement consisting of an iron blade, fitted to an iron handle with which it makes an acute angle, and is worked by the arms with the blade pointing towards the workman.

Nos. 18-19. PAHAR (CROWBAR).—This is a straight iron bar sharpened at one end, and is used for levering out stones and breaking hard clods.

Nos. 20-21. PAVDA (HOE).—This is a sort of shovel used for scraping the surface of the soil and when necessary to throw off earth. It is also used for turning up earth.

Nos. 22-26. (SICKLES) VILLAS.—Sickles used for reaping grain crops and cutting grass, are all of much the same pattern. Some are saw-edged. Rice is usually cut with this ; other grain being cut with plain edged ones.

No. 27. KURPA.—A worn out sickle is cut down and shaped to make a serviceable weeding hoe. Both the outer and

inner edge of this instrument is used for digging up weeds, which spring between the row of crops, when bullock hoes cannot be used.

No. 28. KOHITA (BILL HOOK).—This is used in the Konkan and Deccan for lopping wood and in the repair of filed instruments.

Nos. 29-30. WINNOWING SCOOP. WINNOWING SIEVE.—Sieves of bamboo or grass are used on the threshing floor to handle the threshed chaff when the wind is not strong enough for winnowing in the usual way. The winnowing scoop is used in every part of India.

No. 31. RICE POUNDING MILL.—This is an implement called Ukhal, used for threshing rice to separate the chaff from the grain.

Nos. 32-33. CART USED FOR CARRYING HAY. CART USED FOR CARRYING FODDER.—Carts vary greatly in different provinces in respect of size, construction and general utility. In some tracts they are very cumbersome, in other, light and handy.

Nos. 34-36. CORN MEASURES.—Used to measure corn.

No. 37. MODEL OF A SUGAR CANE PRESS.—This consists of a stout wooden frame in which are fixed two vertical wooden rollers. When in use, the mill is fixed over a cistern into which the cane juice is pressed out by the rollers, which are turned by oxen, yoked to it.

### WATER LIFTS.

Water Lifts are contrivances for drawing up water from wells, tanks, and Jhils (natural depressions) either by hand or by employing bullocks. These do not differ materially from those in use in former times. The following are the most serviceable methods :—

No. 38. THE BAGOR MOHOTE.—This is usually made of leather, though sometimes an iron pot is used. The bag is attached to two ropes working over a pulley at the mouth of the well, which is banked up at considerable height above the surrounding ground. From this bank, an inclined plane descends. Bullocks are yoked to the ends of the two ropes, working over the pulley so that when they are at the top of this incline, the bag has descended to the water in the well and become full. The bullocks are then drawn down the incline and pull up

the bag to the surface. It is automatically emptied into the shoot arranged to receive it, whence it flows out into irrigation channels.

No. 39. THE PERSIAN WHEEL.—This is driven by one or more bullocks yoked in a simple fashion to a horizontal wheel provided with cogs. The water is lifted by means of series of earthen pots lashed to an endless rope ladder made of strong fibre, which passes over a revolving cylinder or drum also fitted with cogs fitted into those of the horizontal wheel. When the wheel and the drum revolve, the earthen pots are filled by passing through the water in the well and the water is discharged as the pots are one by one inverted by passing over the drum and is made to fall into a shoot, which forms the beginning of the irrigation channel.

No. 40. THE LEVER OR COUNTERPOISE LIFT.—This is the commonest of the water lifting instruments and is extensively used in Egypt as well as in India. A lever beam is supported in its middle upon a fixed upright pole. One end of the lever is permanently weighted with stones or mud, and this weight is made to out-balance the bulk of the water which is brought up in a vessel suspended from the other end of the beam.

No. 41. THE SMALL SCOOP LIFT.—The scoop is suspended from a tripod and is swung by hand and made to lift water in a very simple way, but only from a small depth.

*Books consulted.*—Imperial Gazetteer, Vol. III.  
India by Wallace.

## SPECIMENS OF SILVERWARE, ETC.

### CASE No. 29.

Apart from its value and beauty, silver is used in the manufacture of every class of decorative work on account of its qualities attractive to the workman. These are its malleability, ductility, fusibility and capacity to take any surface desired by the craftsman.

The methods of producing works of art from silver are the following:—(1) Carving, (2) Casting, (3) Repousse hammering, (4) Encrustation, (5) Filigree or wire working, (6) Chasing and engraving.



Carving from a solid ingot or piece of silver is rarely practised on account of the useless waste of metal it involves and the impossibility of bringing out the most attractive characteristics of the metal. Ordinary chisels, scorpers and gravers are employed to do this work.

Castings of silver are generally made with an alloy according to the colour and degree of hardness required. Sand or clay moulds are employed, the original model being made in wax or in gesso (a mixture of whiting and glue).

Repousse hammering is the most widely practised method of working. A thin sheet of silver is prepared and fixed upon a bed, made of pitch mixed with tallow. Upon it, a design is traced, and the background is then depressed by means of a hammer and 'punches of various shapes' Where the design is in high-relief, it is worked alternately from both back and front after each annealling, the high projecting masses being forced up from the back, while the back ground is depressed from the front.

Encrustation is the form of decoration by soldering thin plates, grains or ornaments made of wire upon a plate of either repoussed or plain sheet metal. This method has been practised in India for generations and is still in vogue.

FILIGREE OR WIRE-WORKING.—The ductibility of silver allows the finest of wires to be drawn from it. A flat plate of steel with holes of gradually decreasing size pierced through it, each hole tapering slightly with its passage through the plate, is taken. A thin strip of the metal is cut and filed until it will pass through the largest of the holes. It is then seized with a pair of very stout pliers and the strip is drawn through the hole, which gives its shape to the metal as it passes through and increases its length. This operation is repeated through successively decreasing holes until the wire is of the desired diameter. The wire is then bent into shapes according to the design, which is then soldered on a flat plate.

CHASING AND ENGRAVING.—This is another favourite method of delicately ornamenting silver articles, and is done by means of triangular pointed tools, which cut into the surface of the metal.



### Styles of Workmanship in Indian Plate.

The most important locality in the production of silver plate is Cashmere. This work is done in four different patterns : (a) The Shawl Pattern, (b) The Arabesque style usually Parcel Gilt, (c) The Rosette Style, (d) Wire Work, (e) Modern Chunar Pattern, which is confined to depicting leaves and trees, and lastly the Lhasa style where the representation of a dragon is chiefly put on the handle.

In the United Provinces there was only one style of work, namely, the Jungle Scene, which consisted of closely compacted palms. This is now abandoned and other styles are imitated.

Bengal produces a form of ornamentation in which rural (as distinct from hunting and jungle) scenery is depicted on a frosted surface. This is now imitated in every silver manufacturing centre.

In Burma, there are two widely different styles, the one more or less characteristic of Rangoon, the other of Moulmein. In the former, the surface is frosted, in the latter it is polished or burnished. In both these styles of work, the silver is simply repoussed mainly in human forms or with belus in hunting or sporting scenes.

The principal articles made in Burma are the large bowls. These are beaten up from discs of silver larger and thicker than a rupee. One of these discs is beaten into a shallow saucer, another is put on the bottom and hammered until it unites with the former, and the saucer begins in consequence gradually to assume the shape of a cup. This process is continued until the designed size and shape is obtained. The bowl is then filled with lac, the pattern traced, then repoussed and finally chased.

The characteristic feature of the silver plate manufactured in Madras and South India consist in the mythological medallions and canopied niches in imitation of the encrusted and agglutinated style of work, and this is known chiefly as "Swami style." Here is also to be noted the process of plating where thin sheets of gold, silver, iron, brass and tin are superimposed and welded together under great heat. A design is traced upon the upper sheet, and exquisite effects of flowers, leaves, birds and animals are produced by cutting into and exposing the various layers of metals according to the final result to be obtained.

The nearest form of decoration to be found in India are the Travancore copper articles inlaid with silver, and steel arms or Northern India, damascened with gold and silver.

And lastly in the Bombay Presidency, there may be said to be two very well marked styles: these are the Poona and the Cutch.

In the former a very bold and deep form of repousse prevails the chief subjects being in half relief and the silver usually oxidised; in the latter a graceful and intricate floral design in shallow repousse is practised. This consists of polished encircling lines or branches on a frosted background and the floral scroll like that of the windows at Ahmedabad, having no beginning or ending but in which a composite flower recurs at repeated intervals.

*Books of Reference*.:—Monograph on Gold and Silver in Bombay Presidency by C. L. Burns.

### **Silver work from Cutch.**

1. Double rattle.
2. Ostrich shell mounted with four cups.
3. Pen-holder.
4. Cream jug.
5. Silver bowl.
6. Inkstand.
7. Kamandaloo.
8. Indian Lota.
9. Candle-stick stand.
10. Mounted stone box.
11. Shell mounted on a silver tripod.
12. Set of 4 silver pots with a blackwood stand showing the different stages of manufacture.
13. Photo-frame.
14. Salver, six-sided.
15. Cup and saucer.
16. Carved dish, round.
17. Tea Kettle.
18. Perforated Tumbler from Cutch.

### **(b) Silver work from Nepal.**

1. Image of a Goddess mounted on a brass throne set with turquoises.

**(c) Silver work from Benares.**

1. Cream jug.
2. Tea pot.
3. Mahants on elephants, pair of.

**(d) Silver work "Swami style" from Madras.**

1. Sugar pot.
2. Fruit comport.
3. Flower vase.
4. Powder box.
5. Bowl.
6. Cup on a stand.
7. Tumbler.
8. Cup.

**(e) Silver work "Dead polished."**

1. Sugar mug.
2. Coffee pot.
3. Round tray from Burma.
4. Milk jug from Dacca.

**(f) Silver work from Lucknow.**

1. Hooka-chillum.

**(g) Silver work from Delhi.**

1. Sugar pot.
2. Pair of spoons.
3. Bowl.

**(h) Silver work from Cashmere.**

1. Gulabdani.
2. Sugar bowl.
3. Do.
4. Ornamental bowl.
5. Cruet in four pieces with three spoons.
6. Tray, Carved.

**(i) Silver work from Burma.**

1. Bowl.
2. Bowl, small.
3. Salver, round.

**(j) Silver work from Poona.**

1. Chunam box.
2. Gulabdani.
3. Box, oblong (powder).
4. Attardani.
5. Pan dan.
6. Chowfula.
7. Do.
8. Betel-nut receptacle.
9. Do.

**(k) Silver work from Cuttack.**

1. Gulabdani.
  2. Do.
  3. Flower Basket
  4. Tray.
- } Of Italian manufacture, after the manner  
of Cuttack work.

**(l) Mysore Silver work.**

1. Tray.
2. Box (for keeping sectarial stamps).
3. Lingam box.
4. Salver.

**(m) Miscellaneous Silver work.**

1. Gilt Gulabdani.
2. Indian deer (antelope).
3. Betel-nut cracker.
4. Fan handle.
5. Lotus shaped attardani.
6. Liquor set from Siam.
7. Silver tray in Persian style of carving.
8. Drinking cup carved in Persian style.
9. Silver bowl from Jaipur.
10. Tea pot embossed from Jaipur.
11. Mother-of-Pearl carving set in a silver stand.
12. Carved Cocoanut mounted in silver.
13. Embossed Idol of Murlidhar.
14. Embossed Idol of Ramkrishna.

**Ornaments made of Silver.**

1. Head ornament from Lucknow.
2. Waiste-band with bells from Somaliland.

3. Pair of ear-boss from Ahmedabad.
4. Ear-boss from Ahmedabad.
4. Do.
6. Buckle from Hyderabad.
7. Buckle from Poona.
8. Bangle from Ahmedabad.
9. Bangle from Lucknow.
10. Pair of anklets.
11. Do.
12. Langoor.
13. Athasio-bajri.
14. Athasio-gehu.
15. Langoor.
16. Kadoli.
17. Zangree.
18. Do.
19. Do.
20. Guntham ghagra.
21. Kothadu.
22. Wristlet.
23. Pair of armlets from Trichinopoly.
24. Pair of Wakees.
25. Brooch.
26. Necklace with Zangree.
27. Necklace from Bangalore.
28. Pachmania necklace.
29. Necklace from Ajmere.
30. Necklace from Gwalior.
31. Head-ornament from Lucknow.

#### **Articles set with turquoises.**

1. Clasp.
2. Buttons.

#### **Enamelled Specimens of Silver.**

1. Box, enamelled in gold leaf from Nathdwara.
2. Box.
3. Sugar bowl from Cashmere.
4. Jug.
5. Umbrella handle.
6. Attardani.
7. Cigarette case.
8. Cup and saucer.

9. Parrot charm.
10. Hukka from Lucknow.
11. Enamelled Dish from Nathdwara.
12. Enamelled Buckle from Nathdwara.
13. Enamelled Powder box from Switzerland.
14. Enamelled Photo frame from Germany.
15. Enamelled KATORA from China.

### **Specimens of Copper Inlaid with Silver.**

1. Octagonal plate from Travancore.
2. Cup with saucer.
3. Indian Lota.
4. Copper Vase gilded (Fern pot).
5. Embossed and Inlaid Dish from Tibet.
6. Round dish from Travancore with the figure of Rama.
7. Cup or bowl from Tanjore.

**INLAID WORK.**—In this class of work thin sheets of silver, iron, brass, and tin are superimposed and joined together under great heat. The design is traced upon the upper sheets, and exquisite effect of flowers, leaves, birds and animals are produced by cutting into and exposing the various layers of the metal according to the final result to be obtained.

### **Models made of Clay to illustrate Workmanship.**

1. Model of Enamellers in Jaipur.
2. Model of a Goldsmith at work.
3. Model showing how repousse work is done on silver.
4. Model showing the process called "Shape making" in the making of silver pots.
5. Model of a Silversmith from Cutch.

### **MODEL OF THE TAJ AT AGRA IN ALABASTER.**

CASE No. 30.

Before the advent of the Muhammadans in India, the principal styles of architecture were the Hindu, the Buddhist, the Jaina and the Chalukyan. With the Muhammadan conquest of Sind in the year 712 A. D. and the subsequent establishment of the Muhammadan rule from the eleventh century of the Christian era a foreign style of architecture was introduced which in the course of six centuries became the most notable style in Northern and a portion of Southern India. The indige-



nous styles were gradually absorbed and with the introduction of Persian and Central Asian decorations, the Moghul style, which was the latest development of this, reached its maturity between the year 1556 A.D. under Akbar and 1660 under Aurangzeb. The style is divided into two main schools : (1) Buildings erected during the reigns of Akbar and Jehangir ; (2) Buildings erected during the reigns of Shah Jehan and Aurangzeb. The buildings of the former period are strongly infused with the traits of Hindu architecture, while those of the latter are to a great extent devoid of it.

As Moghul architecture developed, it became lighter and more graceful, while the adoption of marble as a material for facing the walls of the building led to the introduction of a very delicate and refined style of decoration in low relief carving combined with inlaid work in coloured marbles and precious stones.

The Taj is the culminating instance of the elegance and beauty of this latter style. It was built by the Emperor Shah Jehan over the tomb of his consort Mumtaz, who died in the year 1630. The design of the building is supposed to have been furnished by one Ustad Isa, a native of Persia and nearly seventeen years were occupied in its erection. Over 20,000 persons including craftsmen from Samarkand, Persia, Turkey and even Italy are said to have been employed on it. The material used in its construction is red sandstone faced with marble. These were brought from distant parts of the country ; while the precious stones, used in the inlaid decorations were obtained from Tibet, Ceylon, Arabia and China. Its cost is estimated at two crores of rupees.

*Authorities consulted:*—"History of Architecture" by Fergusson.

"Agra and the Taj" by E. B. Havell.

"Mediæval India" by S. Lanepool.

## INDUSTRIAL SECTION.

CASE No. 52.

### Specimens of Pottery.

#### (a) Pottery manufactured in Europe—

1. Seven specimens of alabaster, unglazed.
2. Two specimens of alabaster glazed.

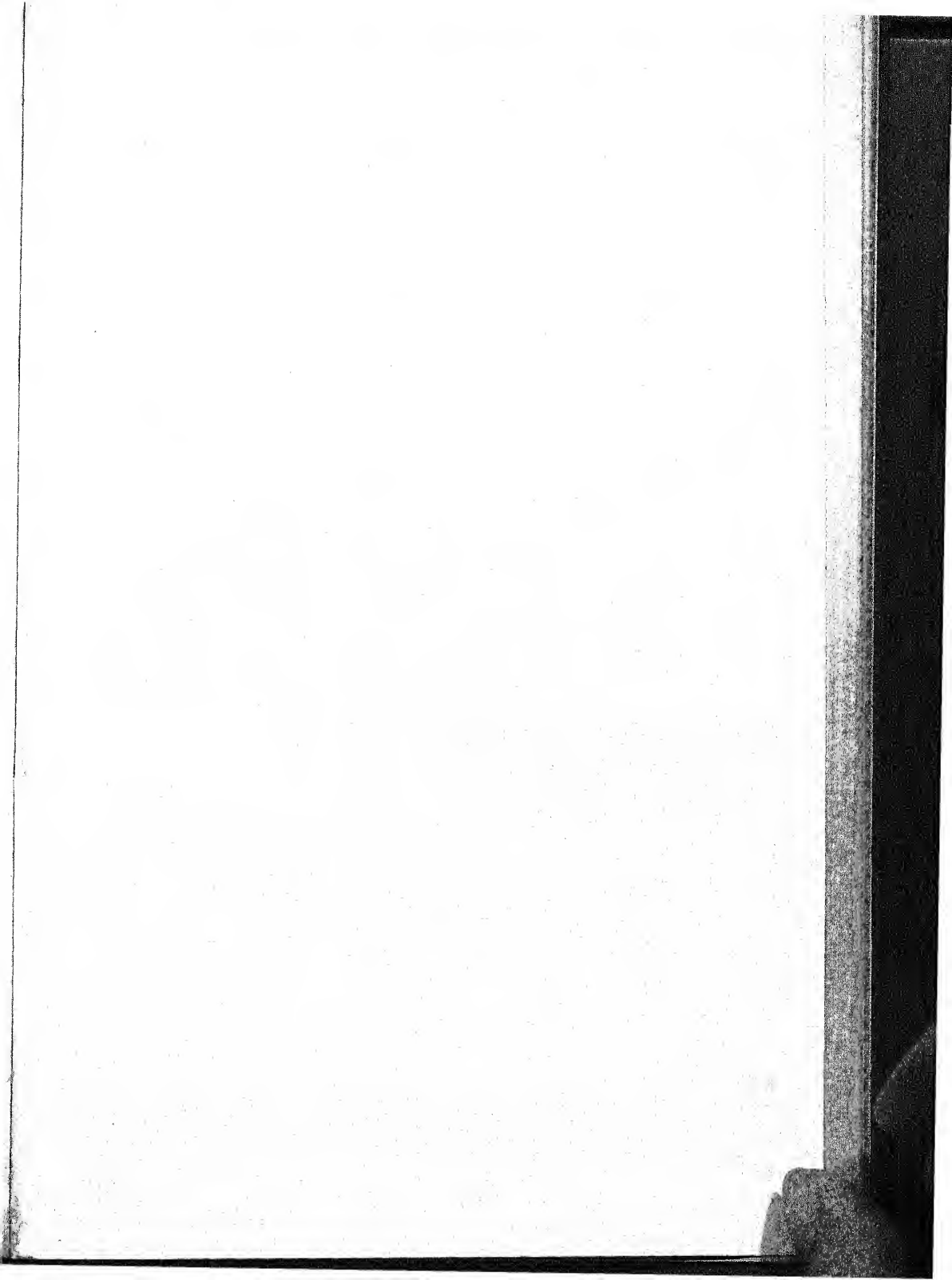
3. One barrel-shaped jar.
4. Five jars, Minton.
5. Three water pots (khujas with dishes).
6. Four flower vases.
7. One tea kettle.
8. One coffee pot.
9. One milk jug.
10. One Austrian plate "Venus."
11. One jug.
12. One ampulla.
13. One ampulla (small).

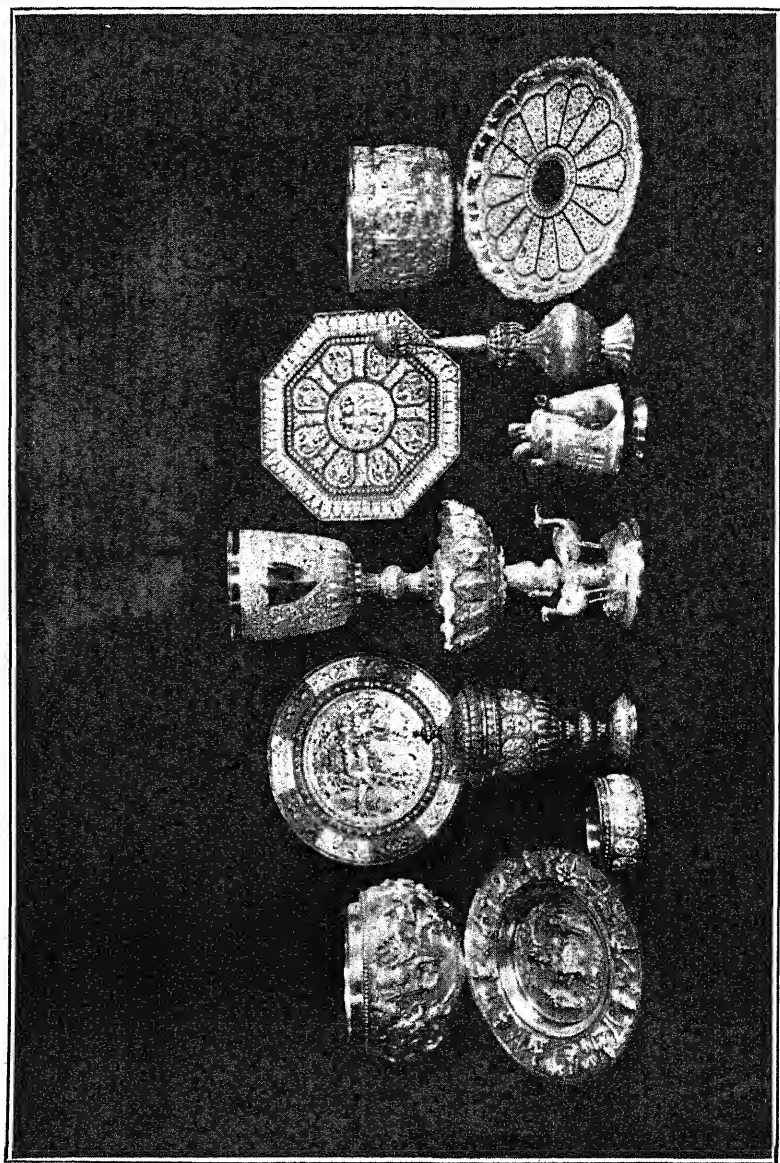
**(b) Pottery manufactured at Patan—**

1. Seven khujas.
2. Three water pots with spouts.
3. Four incense holders.
4. One hooka.
5. Four water pots.
6. One flower vase with three spouts.
7. One tea kettle.
8. Three vases.
9. One vase on stand.
10. One cup with saucer.
11. One model of a dog.
12. One model of an elephant.
13. One ink-bottle stand with mounted cobra.

**(c) Pottery manufactured at the School of Art, Bombay  
cir. 1884—**

1. One vase.
2. Five specimens of tiles decorated in Sind style.
3. One jar with flower decoration.
4. One jar with mythological figures painted on a stand.
5. One jar with figures of Buddha painted on a stand.
6. One jar with pea-cock feather decoration on a stand.
7. One pot with cover (green).
8. One flower vase (blue).
9. One pot for preserves.
10. Three round dishes.
11. One khuja, decorated.





Some of the specimens of Silver Plate.

12. Vase decorated on a stand.
13. Decorated flower vase.

**(d) Ancient pottery—**

1. One plaster cast of a casket said to contain Buddha's ashes.
2. Box made of clay and burnt with figure decoration.
3. Fourteen specimens of ancient Indian pottery found in U.P.
4. One handled vase in black glaze.
5. One large figure of painted decoration, about 1,200 B.C.
6. Three specimens of ancient Roman pottery, 2 A.D.
7. One specimen of ancient Egyptian pottery.
8. One specimen of old Babylonian brick with cuneiform characters.

**(e) Pottery manufactured in Calcutta—**

1. Bison.
2. Figure of Lakshmi.
3. Figure of Saraswati.
4. Figure of Damayanti.
5. Figure of a Grecian lady.
6. Figure of a Parisian lady.

**(f) Pottery manufactured at Burhanpur—**

1. khuja.

**(g) Specimens manufactured at Jaipur—**

1. Two lotas.
2. Two surahis.
3. One khuja.

**(h) Pottery manufactured at Allahabad—**

1. One cup with saucer.
2. One dish.
3. One tea kettle.
4. One jar with lid.

**(i) Pottery manufactured at Lucknow—**

1. Seven figures of religious mendicants.
2. One khuja.
3. One chillum.

**(j) Bactrian sculpture—**

1. Panel in terracotta.

**(k) Tiles made in Persia—**

1. Two tiles rose decorated.
2. One tile about the year 607 A.H.

**SPECIMENS OF ARTICLES MADE OF PAPER-  
PULP FROM JAIPUR AND JAPAN.**

CASE No. 56.

1. 32 wooden stands with mounted different birds from Jaipur.
  2. 23 Imitation fruits from Japan.
- Paper pulp is made of paper moistened and beaten together with plaster, clay and glue in certain proportions.

**SPECIMENS OF METAL WORK FROM JAIPUR.**

CASE No. 57.

**Enamelled Work.**

1. Bowl.
2. Bowl.
3. Dish portraying Rama and Sita.
4. Dish with astrological figures.
5. Aftaba.
6. Flower vase.
7. Round dish.
8. Round dish.
9. Round dish.

**Koftgari Work.**

1. Shield.
2. Salver.

**Carved Work.**

1. Chemboo.
2. Dish with a drawing of the Ras-Lila.
3. Kamandaloo.

**Miscellaneous.**

1. Spouted jug.
2. Yarkand Coffee pot.



3. Rose water sprinkler.
4. Rose water sprinkler.
5. Hanging lamp, Persian pattern.
6. Hanging lamp, Persian pattern.

### METALWARE (INDIAN).

CASE No. 58.

#### Koftgari.

1. Helmet from Jaipur.
2. Stick from Panjab.
3. Box from Mooltan.
4. Photo-frame from Panjab.
5. Buckle.
6. Paper-cutter.
7. Paper clip.
8. Paper weight.

#### Inlaid with lac.

1. Aftaba from Bokhara.
2. Round dish with mythological figures from Jaipur.
3. Enamelled Jar from Jaipur.
4. Pair of cloisson vases from Japan.
5. Enamelled tray from Panjab.
6. Inlaid tumbler from Jaipur.
7. Enamelled hooka from Persia.
8. Inlaid flower vase from Jaipur.
9. Inlaid flower vase from Jaipur.

#### Embossed Work.

1. Brass round dish with astrological figures.

#### Miscellaneous.

1. Rose bowl from Ceylon.
2. Hand lamp, Cashmere pattern, from Jaipur.
3. Rolling lamp from Jaipur.
4. Buddhist temple from Ceylon.
5. Indian stag.

*Note.*—Enamelling may be described as the art of colouring and ornamenting the surface of metals by fusing over it different

mineral substances. Success depends on the skill and resources of the operator, and the materials employed. The range of colour attainable on gold is much greater than on silver and still more so on copper than on brass. This peculiarity is to a certain extent overcome by silvering or gilding the surfaces to be enamelled. There are known to exist three or four methods of enamelling. (1) Cloisonne of Japan and China, in which wires are fastened by gum, or simply impinged or in others welded to the surface of the metal in elaboration of the design. The spaces thus out-lined are loaded with colouring materials, and the article placed in the furnace until the glazes fuse, the wires preventing the fusion of colours. (2) Champleve, in which the metal is engraved or chased, repoussed or blocked out in such a way as to provide the depressions within which the colours can be imbedded. In Jaipur, the pattern is chased, in Cashmere, repoussed, and in Mooltan, it is blocked out by means of dies. (3) In Cashmere the surface is painted with a sort of silicated or readily fusible paint, and the article is then subjected to a moderate heat sufficient to melt the paint, but not to cause the colour to fuse together.

The above note on Enamelling refers to specimens exhibited in Case Nos. 57-58 and 29 containing enamelled silver ware.

There is also another method of enamelling known as Quasi enamelling. This is a peculiar style of work. A glass of green or red colour is taken, and a frame of silver wire is made of the exact size and shape of the glass, and across this is attached a sheet of fairly thick gold leaf. This is then embedded on lac, and the pattern punched out and chased on the glass. The glass is then semi-fused, and while still hot the rim of silver and film of gold are slipped over the edge and pressed on to the surface of the glass. The article is again heated until a sort of fusion takes place, and the glass and gold becomes severely united (see Box from Nathdwara).

KOFTGARI.—Damascening is the art of inserting wire of gold or silver into the surface of iron or steel. The design is first engraved in the steel surface with a hard and sharp style, and the wire held by one hand within the groove, is hammered by the other until it is made literally to unite with the steel. This art seems to have taken its origin with the ornamentation of

swords and other weapons. In Gujerat and Sialkote, in Punjab, and in Jaipur large quantities of this class of work are manufactured.

**LAC COLOURED METAL.**—This method of ornamentation is a cheap imitation of Enamelled work. The required pattern is first chased on brass and the depression is then filled with coloured lac, the excess being rubbed off with sand-paper.

*Reference.*—Indian art at Delhi.

## INDIAN ARMY WAR MEDALS.

### CASE No. 60.

- 1799 Seringapatam (Zinc)
- 1799-1825 Mehidpur—The 1st India Medal (Silver)
- 1824-1826 1st Burma (Silver)
- 1839 Guznee, capture of (Copper)
- 1842 1st Cabul, Khilati-Ghilzai (Silver)
- 1842 2nd Cabul, Candahar, Guznee & Cabul (Silver)
- 1857 (China 1842-1860) Canton (Silver)
- 1843 Meanee and Hyderabad (Silver)
- 1845 (Sutlej campaign) Ferozpur (Silver)
- 1846 Aliwal (Silver)
- 1846 Sobraon (Silver)
- 1848-1849 Panjab (Silver)
- 1852-1895 (2nd Indian General Service Medal) Pegu (Silver)
- Persia. (silver)
- North West Frontier (Silver)
- Umballa (Silver)
- Bhutan (Silver)
- Lushai (Silver)
- Peerak (Silver)
- 1877-1878 Joakee (Silver)
- 1879-1890 Naga (Silver)
- 1885-1887 Burma (Copper)
- 1888 Sikkim. (Copper)
- 1888 Hazara (Copper)
- 1887-1888 Burma (Silver)
- 1889-1890 Chinlushai (Copper)
- 1891 Samanna (Copper)

1891 Hazara (silver).  
 1891 North East Frontier (silver).  
 1891 Hanza (silver).

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CASE No. 61.

1889-1892 Lushai (copper).  
 1889-1892 Burma (silver).  
 1889-1890 Chin-Lushai (silver).  
 1894-1895 Waziristan (copper)  
 1857-1858 (Indian Mutiny Medal) Relief of Lucknow and  
 Central India (silver).  
 Delhi (silver).  
 Lucknow (silver).  
 1878-1880 Ali Masjid (silver).  
 1878-1880 Cabul (silver).  
 Robert's Star (copper).  
 1887-1889 Egypt (silver).  
 1882-1889 Khediv's star (copper)  
 1895-1898 (3rd Central India Service) Defence of Chitral, 1895.  
 (silver).  
 1895 Relief of Chitral (silver).  
 1897 Malakand (copper).  
 1897-1898 Tirrah (copper).  
 1897 Samana (copper).  
 1897-1898 Panjab Frontier (copper).  
 1896 (British Medal) Sudan (silver).  
 1896 (Khediv's Medal) Sudan (silver).  
 1900 China (silver).  
 1900 China (Relief of Peking) (silver).  
 1900-1904 East Africa General Service (silver).  
 1901-1902 (4th Indian General Service) Waziristan, 1904.  
 (silver)  
 1903-1904 Tibet (silver).  
 1908 North West Frontier (silver).  
 For long Service in the Volunteer Force (silver).  
 For long service and good conduct (Naval) Silver.

## SPECIMENS OF STAMPS USED BY THE HINDUS TO DENOTE THE SECT THEY BELONG TO.

### CASE No. 62.

Stamps used by the devotees of the Vaishnava Sampradaya.

1. 8 Stamps used by the followers of Sri Ramanujacharya.
2. 19 Stamps used by the followers of Sri Ramanadacharya.
3. 8 Stamps used by the followers of Sri Madhavacharya.
4. Stamp used by the followers of Swami Nimbaraka.
5. 6 Stamps used by the followers of Sri Vallabhacharya.
6. Stamp used by the followers of Lord Sri Gauranga.
7. Stamp used by the followers of Sri Swami Narayan.
8. Stamp used by the followers of Sri Swami Kabir.
9. Stamp used by the Bendiwalees.
10. Stamp used by the Satnanees.
11. 14 Stamps used by the Vaishnava minor Sects.  
Stamps used by the devotees of Shiva Sampradaya.
12. 11 Stamps used by the Shivites.
13. Emblems of Sri Vishnu.
14. 8 Chakras used by the Saktas or Devi worshippers.
15. 6 Stamps used by the Saktas or Devi worshippers.

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## EMBROIDERED KINNARS OR BORDERS.

### CASE No. 63.

1. Ten assorted gold kinnars or borders from Ajmere and Delhi.
2. Five assorted silver kinnars or borders from Ajmere and Delhi.
3. Eighteen assorted silk kinnars or borders embroidered in gold and silver thread from Surat and Ahmedabad.

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### CASE No. 64.

1. Five gold embroidered Kor or borders from Surat and Ahmedabad.
2. Four specimens of fancy Kor from Surat and Ahmedabad.
3. Four specimens of Gangajamni Kor from Surat and Ahmedabad.
4. Five specimens of silver Kor from Surat and Ahmedabad.

## CASE No. 65.

One model of a Toddy-shop scene containing a model of a shop and thirty-six figures. This is intended to show the effects of excessive Toddy drinking.

**PLUMBAGO.**

Plumbago erroneously called Black-lead is a mineral, which consists chiefly of the chemical element Carbon and is found always in rocks belonging to the earlier formations. It exists native in two varieties, one of which is fine grained and amorphous; the other, of which Ceylon plumbago is an example, is composed of small flat plates.

CHARACTER.—It is the softest of minerals, it is black, and opaque, and it is a good conductor of electricity, on account of which it is largely used in the process of electrotyping. It is greasy to the touch and readily soils the fingers. In point of coloration, it varies from black to dark steel grey with a metallic lustre.

LOCALITY.—The mineral is largely found in Borrowdale in Cumberland (*England*), near Passau in Bavaria (*Germany*), in Siberia, in the State of New York (*United States of America*), in India, and Ceylon, which yields the richest deposits, pure and best in quality. In India, the mineral is found in small quantities in the different parts of the country, but very little progress has been made in mining except in the State of Travancore, probably on account of the quality of the mineral found, not having any commercial value.

USES.—Plumbago is chiefly used in the manufacture of pencils, oven plates, stove polish, grate and iron-work polish, dry lubricator for machinery, and in the facings of moulds, etc. In India, it is mostly used for polishing specimens of pottery.

MANIPULATION.—It is necessary to pay great attention to the quality of plumbago used in the manufacture of different articles. The amorphous quality is chosen when a lubricating or covering body is required as in the case of antifriction compounds such as blackleading, electrotyping, etc, whereas for metallurgical and refractory purposes, the other variety is preferable.



For use, the mineral has first to be freed of all the impurities with which it is found in contact. It is then reduced to very fine powder and afterwards compacted by subjecting it to moderate pressure. The compacted mass is then encased in thin paper glued all over and pierced in one place by a small hole to allow escape of air, when placed under an exhausted receiver. By means of this operation, the air is completely removed, when now the orifice is closed. The mass is pressed again, and the block now formed is capable of being treated as a natural solid body.

In making crucibles, plumbago powder is mixed with a small portion of China clay varying according to the use to which the crucible is intended. A little of ground charcoal is also added. The ingredients are first mixed dry, and then water is added, and the whole mixture is thoroughly mixed and kneaded into a homogeneous mixture. The material emerges in the form of thick mud, and is then moulded either by hand or machinery, the operation being performed in almost exactly the same way as by potters and afterwards baked.

*References :—*The Mineral Kingdom by Dr. R. Braus.

The Commercial Products of India by Sir G. Watt.

Geology of India (Economic Geology) by V. Ball.

Imperial Gazetteer of India, Vol. III.

Spon's Encyclopædia of Manufactures and Raw Materials.

## WRITING PENCILS MADE OF PLUMBAGO COMMONLY CALLED LEAD PENCILS.

CASE No. 66.

*Presented by the Director of Industries, Madras, 1919.*

1. Mineral plumbago.
2. Mineral plumbago.
3. Mineral plumbago.
4. Mineral plumbago.
5. Fire-clay.
6. Graphite in two tubes.
7. Graphite Powder in Bottle.

8. Graphite Powder in tube.
9. Clay, washed.  
*Presented by the Director of Industries, Madras, 1919.*
10. Clay, crude.
11. Lead, uncooked.
12. Baked Lead.
13. Borax.
14. 8 Different specimens of slack in different stages of manufacture.
15. 10 Specimens of Pencils in different stages of manufacture.
16. Crucible.  
*Presented by the Curator and Secretary in 1919.*
17. Crucible.
18. Six Photographs showing different methods.  
*Presented by the Director of Industries, Madras.*

### **CASE CONTAINING SPECIMENS OF WAR TROPHIES.**

CASE No. 67.

**Presented by the Government of India.**

1. Seven helmets.
2. Rifles, ten.
3. Bayonets, sixteen.
4. Machine guns, two.
5. Badge for voluntary service rendered during the late European War, 1914-1918.
6. Medal for Recruiting work done during the late war.
7. Box containing Christmas Presents to the soldiers, presented by H. R. H. Princess Mary, 1914.
8. Two knives taken from the Arabs.
9. One clip of empty cartridges.
10. One Fuse for exploding gun. (Taken from the Turks).

CASE No. 68.

Full sized model of Sivaji (1627-1680), presented by Messrs. Gokhale Bros. of Bombay in 1921.

### **SPECIMENS OF TURBAN CLOTH.**

CASE No. 79.

- 15 specimens of old turbans made of printed cloth and

collected mostly at Surat and Ahmedabad. These possess more of ethnological interest than any commercial value, as the use of these has now been discarded in favour of modern head gear.

## SPECIMENS OF ROSARIES.

### CASE No. 88.

A Rosary is a string of beads generally formed into a circlet or loop. It is used in the performance of religious ceremonies and prayers. The materials of which they are made, range from the natural berries to costly metals and precious stones. Long before the use of the rosary became known in Europe, mechanical devices for the counting of prayers or mystical sentences were in use among the various Oriental people, upon whose minds the idea has a principal hold that repetition gives to the prayers or sentences uttered, a particular merit and potency. It is probable that before the rosary came into use, fingers, pebbles, knotted cords were employed for the same purpose.

THE HINDU ROSARY.—The original invention of the rosary is ascribed to the Hindus. The Sanskrit name for it is Japmala, that is a chaplet used in Japa. The name of the deity or mantra was repeated as a means of promoting contemplation and mental abstraction. Corresponding to the great sects into which the majority of Hindus are divided, the materials of the beads forming their rosaries differ. The Shivites use a rosary made of the rough berries of the Rudraksh tree (*Elæocarpus ganitrus*) which contains 18 or 108 beads. Another rosary, made of teeth of dead persons called "Dantamala" is used mostly by ascetics belonging to this sect. The rosaries used by the votaries of Vishnu contain the same number of beads, but their materials range from the natural seeds to precious metals and stones of value. Rosaries made of the wooden beads from the sacred Tulsi (*Occimum sanctum*) tree and the seeds of the Indian Lotus are generally preferred on account of the sanctity attached to those plants according to the Puranas. The Vishnavites will never use a rosary made of the teeth or bone of any animal. Besides serving the purposes mentioned above, rosaries are worn as necklaces by the followers of Vallabacharya, and play an important part in the ceremony of initiation. It is stated

in the Yoga Shastra (Science of Yoga) that a perfect yogi can repeat the name of the deity 108 times while holding his breath, this number of beads has therefore been selected in forming the rosaries used in prayer by the Hindus.

**THE BUDDHIST ROSARY.**—The rosaries of the Buddhists in Burma and China contain 108 beads, but those in Japan contain 112. The materials vary according to the taste, rank and wealth of the owner. Commonest are made of seeds, glass, bone and wood of the Pipal tree (*Ficus religiosa*). This wood is used because according to tradition, Buddha obtained Buddhahood while seated within its shade. The more costly rosaries are made of jade, turquoise, silver, gold and precious stones. The countries in which the Buddhist rosaries are used are Burma, Tibet, China and Japan.

The Buddhist rosaries are divided into three parts, two of 27 beads each and one of 54. The parts symbolize the Buddhist triad, (1) Buddha, (2) Doctrine—Dharma; (3) Community—Sangha. Attached to the rosaries are pendant strings, each having small beads to keep count of the number of times the prayers are said.

The number 108 seems to have a special significance, and is said to refer to certain mental conditions or sinful inclinations which are to be overcome by the recitation of formulas or prayers. It may also refer to a similar number of marks said to have been on the sole of Buddha's foot.

In addition to the full rosary of 108 beads, there are in use rosaries of 18 and 16 beads representing the number of disciples of Buddha.

**THE MUHAMADAN ROSARY.**—The Muhamadan rosary called "Tasabih" consists of 99 beads divided into three equal portions by a stone or bead of different shape, or in the more costly varieties by a tassel made of gold thread or variegated silk. The rosary is used for the recital of 99 attributes of God, as, "The Merciful," etc., and the 100th bead or a tassel is added for the name of God.

Corresponding to the two great divisions of the Muhamadans, namely, the Shias and the Sunnis, there is difference in material employed in the manufacture of the beads used for the rosary. The Shias use a rosary made of beads of clay procured from Kerbela. The Sunnis on the other hand use one made of

date stones or of some more costly material. Special value is attached to beads made from materials procured from the sacred cities of Mecca and Medina.

**THE ROMAN CATHOLIC ROSARY.**—The ordinary Catholic rosary consists of 150 beads, divided into ten decades by 15 larger beads. The materials employed in the making of these beads range from common wood to the most costly substances. It is usual, before the rosary is used, for it to be blessed by the priest and in cases, where the beads had previously been worn by a person of known sanctity or had touched the relics of a saint, the rosary is believed to possess miraculous powers and healing virtue.

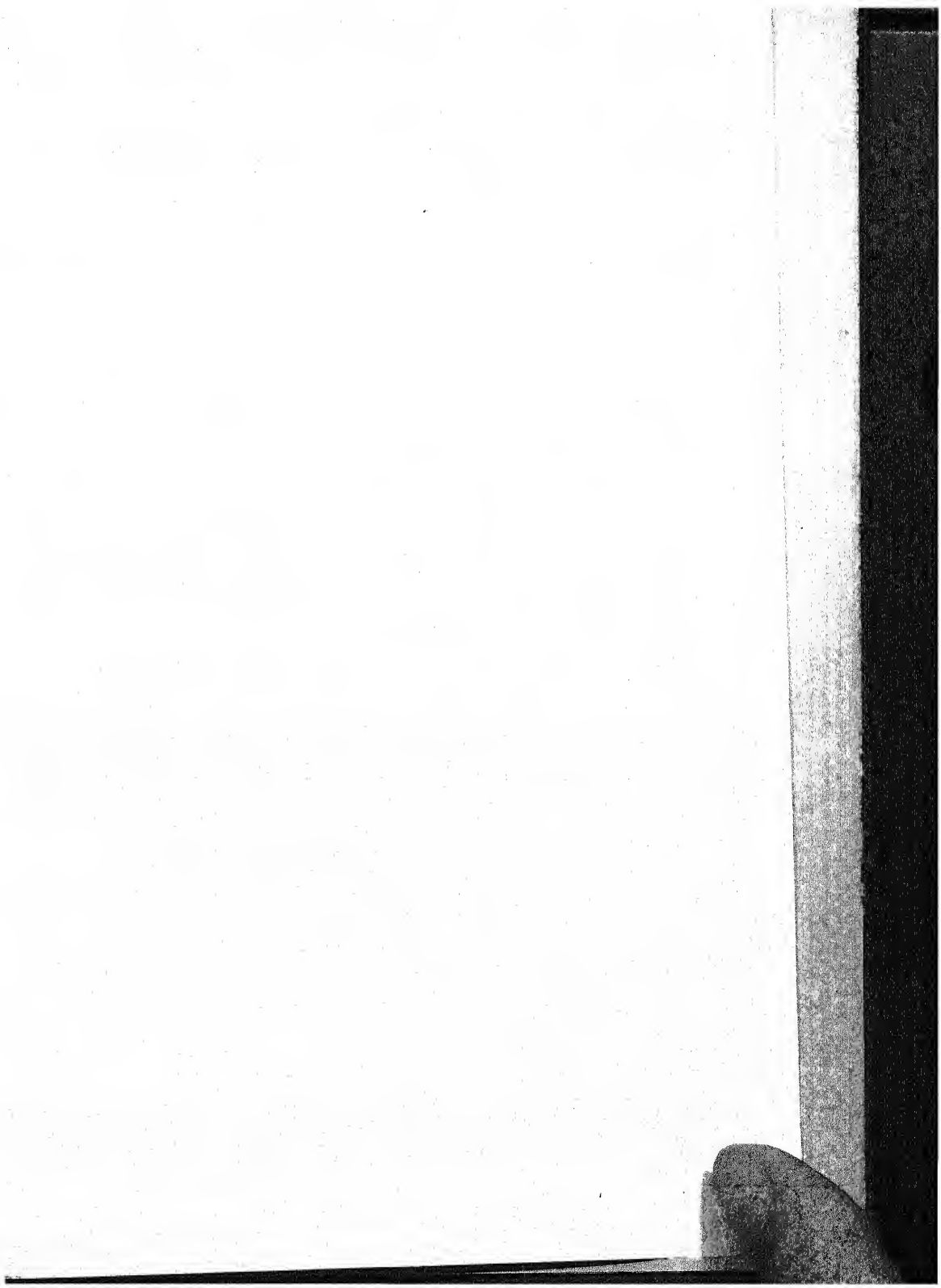
1. Rosary of Tulsi beads used by the Vaishnavites.
2. Rosary of Tulsi used as a necklace.
3. Rosary of Tulsi beads used by the Vaishnavites.
4. Rosary of Tulsi beads used by the Vaishnavites.
5. Rosary made of Rudraksha seeds used by the Shivites.
6. Rosary of Rudraksha seeds used by the Shivites.
7. Rosary of wooden beads (Imitation of Rudraksha seeds) used by the Shivites.
8. Rosary of beads made of teawood used by the Budhists from China.
9. Rosary of beads made of teawood used by the Budhists from China.
10. Rosary of beads made of teawood used by the Budhists from China.
11. Rosary of beads made of seeds used by the Budhists.
12. Rosary of coral beads used by the Muhamadans.
13. Rosary of amber beads used by the Muhamadans.
14. Rosary of beads made of bone used by the Muhamadans.
15. Rosary of beads made of coffee wood used by the Muhamadans.
16. Rosary of beads made of Jetune wood used by the Muhamadans.
17. Rosary of beads made of clay used by Shia Muhamadans.
18. Rosary of beads of clay used by the Shia Muhamadans.
19. Rosary used by Christians of the Catholic faith.
20. Do. do.
21. Do. do.
22. Do. do.

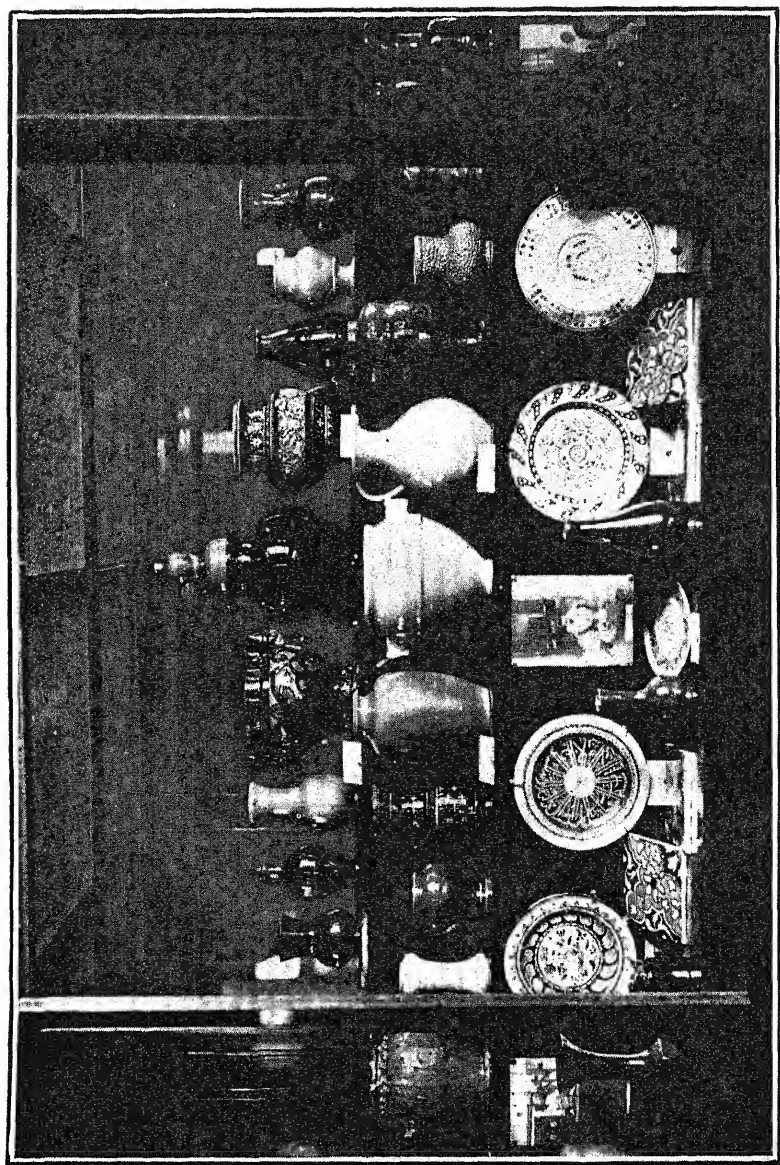
POTTERY MANUFACTURED AT SIR GEORGE  
CLARK LABORATORY SCHOOL OF ART,  
BOMBAY.

CASE No. 89.

1. Ten specimens of tiles.
2. Jar.
3. Jar, yellow.
4. Jar, blue.
5. Flower pot with decorations.
6. Coffee pot made of Bombay clay.
7. Jar, yellow.
8. Biscuit Jar.
9. Jar, brown, glazed.
10. Jar, lead, glazed.
11. Flower pot, saffron coloured.
12. Flower pot, blue decorated.
13. Water Jug, enamelled green.
14. Jar, yellow, glazed.
15. Flower vase, red coloured.
16. Flower pot, narrow necked
17. Jar, crimson.
18. Jar decorated in Ajanta style.
19. Flower pot, crimson.
20. Jug with handle.
21. Milk jug made of Bombay clay.
22. Sugar pot made of Bombay clay.
23. Tea pot made of Bombay clay.
24. Jar made of Bombay clay.
25. Flower pot.
26. Vase.
27. Vase.
28. Flower pot, blue, decorated.
29. Flower pot, green, decorated.
30. Flower pot with red leaf decoration.
31. Flower vase.
32. Flower vase.
33. Jar.
34. Flower vase, dark green.
35. Tea-kettle, white.







Specimens of Pottery, manufactured at the Sir G. Clark Pottery Works, Sir J. J. School of Art, Bombay.

36. Three white coffee cups.
37. Cup and saucer.
38. Four decorated dishes.
39. Ten specimens bottle containing raw materials for the manufacture of pottery.
40. Vase, grey green.
41. Vase, grey green.
42. Flower pot, dark green.
43. Vase, dark-blue (indigo).
44. Vase, enamelled green.
45. Vase, light green.
46. Vase, light mauve.
47. Vase, blue and brown decorated.
48. Vase, light green.
49. Vase, light green.
50. Vase, dark mauve.
51. Vase, buff coloured.
52. Flower pot, dark green.
53. Vase, greenish blue.
54. Figure of a lady in clay.

## INDUSTRIAL SECTION.

### Specimens of Carpets.

(a) The eleven woollen rugs hung on the wall in the north-bay of the Museum were made at the Reay Art Workshop, of the Sir J. J. School of Art, Bombay.

(b) Carpet manufactured in Yerrowda jail. This is a copy of old carpet discovered in Asar Mahal, Bijapur.

## SPECIMENS OF INDIAN ARMS.

### Shield No. A.

- 2 Battle axes or Tabbars.
- 2 Shields with handles of horn.
- 3 Daggars or Kattars.
- 1 Shield.
- 13 Swords.
- 5 Daggars or Kattars.

- 1 Spear-head.
- 1 Spear.
- 1 Match-lock from Kutch.
- Set of arrows used by aboriginal tribes.

### Shield No. B.

- 2 Battle axes or Tabbars.
- 1 Shield with handle of horn.
- 7 Daggars.
- 1 Scythe.
- 13 Spear heads.
- 9 Swords.
- 2 Daggars or Kattars.
- 1 Shield.
- 1 Spear.
- 1 Match-lock from Kutch.
- Set of arrows used by aboriginal tribes.

### Shield No. C.

- 1 Shield.
- 1 Quilted set of armour.
- 1 Bayonet.
- 11 Daggars or Kattars.
- 2 Spears.
- 1 Gauntlet sword or Patta.
- 3 Swords.
- 1 Spear.
- 1 Bitchwa.
- 1 Gada.
- 1 Spear-head.
- 1 Combination weapon consisting of gun, shield, spear, gada and bichwa.
- 1 Bow made of steel.

### Shield No. D.

- 1 Chopper axe.
- 1 Gupti.
- 1 Quilted suit of armour.
- 1 Shield.
- 5 Swords.
- 1 Sumsher.

- 2 Battle axes.
- 9 Daggers.
- 5 Spear heads.
- 1 Match-lock from Kutch.
- 2 Daggers from Mesopotamia (Turkey).
- 2 Daggers.

### **Specimens of Arms not Exhibited on Shields.**

- 1 Old Dutch Cannon. This brass cannon was found whilst ploughing a field at Kurkhunb in the Taluka Bhimthadi, District Poona, bearing date 1640.

*Presented on 22nd February 1883.*

- 4 Shields exhibited on the walls in the south bay.

### **INDUSTRIAL EXHIBITION MEDALS PRESENTED TO THE VICTORIA AND ALBERT MUSEUM.**

Two Benares College.

Two Roorki, North-West Provinces Agricultural Exhibition of 1864.

Two Punjab Exhibition of Arts, Produce and Manufacture.

Two Provincial Exhibition, North-West Provinces. Medal of Honour, 1867.

One Jubbulpore Exhibition of 1866.

Two Exhibition of Manufactures, 1865.

Two Calcutta Agricultural Exhibition, 1864.

Two Agra Divisional Agricultural Association Exhibition, 1865-1866.

Two Agricultural Exhibition, Oudh, 1864.

Two Agricultural and Horticultural Society, Burma, 1865.

Two Commemoration of the First Industrial Exhibition at Nagpur, 1865.

One Paris Exhibition, 1867.

Two Agricultural Show, Calcutta, 1864.

Two London Honoris Causa, 1862.

One Paris Exhibition, 1867.

Two Commemoration Medal of the East India Railway, 1860.

Two Burma, 1865.

Two Proclamation of Queen Victoria, 1837.

One Jubbulpore Exhibition (of silver), 1865.

Two Provincial Exhibition, North-West Provinces, 1866.

## LIST OF STATUES AND BUSTS IN THE VICTORIA AND ALBERT MUSEUM.

- Statue of the Prince Consort    This was executed by Noble and presented to the Museum by Sir David Sassoon in the year 1864.
- Bust of David Sassoon    ..    This marble bust of David Sassoon was specially made for the Museum by Woolner in the year 1865 at the instance of Dr. Sir G. Birdwood.
- Bust of Earl Canning    . . .    This marble bust was executed by Noble and made specially for the Museum to commemorate his visit on the occasion of the opening of the Museum to the public in the year 1856 on his way to assume the office of the Governor-General.
- Bust of H. M. King Edward VII.    This is the work of Marshall Wood and executed by him in the year 1876.
- Bust of Lady Frere    ..    This is a replica of the marble bust of Lady Frere by Noble, which was purchased by Sir Jamsetji Jijibhoy for Rs. 9,950 and was enshrined in a building in mixed Graeco-Roman style erected as a memorial of Lady Frere, who opened the Victoria Garden in 1862. Some years ago, the bust was wantonly defaced by some unknown persons, and was sent to England for restoration and repair. As the mutilation defied suitable repair, Lady Frere's son despatched in its place this replica.



Bust of Mountstuart Elphinstone. Presented by the Committee of the Mountstuart Elphinstone Testimonial as "The tribute of the Elphinstonians, Bombay," in 1862 at a cost of Rs. 4,000.

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